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Western Mining in the Twentieth Century Oral History Series

Robert M. Haldeman

MANAGING COPPER MINES IN CHILE: BRADEN, CODELCO, MINEREC, PUDAHUEL; DEVELOPING CONTROLLED BACTERIAL LEACHING OF COPPER FROM SULFIDE ORES; 1941-1993

With an Introduction by
Pedro Campino

Interviews Conducted by
Eleanor Swent
in 1993

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Robert M. Haldeman, right, receives the *Orden al Mérito* (Order of Merit), *Bernardo O'Higgins*, rank of *Commendador*, from Alejandro Hales, Minister of Mines, Santiago, Chile, September 23, 1993. This is the highest recognition given by Chile to a foreign citizen. In 1957, Haldeman had received the *Orden al Mérito*, *Bernardo O'Higgins* rank of *Official*.

Cataloging information

HALDEMAN, Robert M. (b. 1917) Mining engineer

Managing Copper Mines in Chile: Braden, CODELCO, Minerec, Pudahuel; Developing Controlled Bacterial Leaching of Copper from Sulfide Ores; 1941-1993, 1995, xvi, 163 pp.

Career in Chilean copper mining: engineer to president, Braden Copper Company, El Teniente Mine; advocacy for employment of Chilean engineers and managers; expropriation of mines, and flight from Chile, 1970; return to work for CODELCO, government agency managing El Teniente; work for Guggenheim family and Minerec Corp.; management of Sagasca, Andina, Lo Aguirre, Pudahuel mines; research on controlled bacterial leaching, solvent extraction-electrowinning process for copper from sulphide ores; putting Santiago YMCA on sound economic footing.

Introduction by Pedro Campino, President, Cerro Colorado Copper Corporation

Interviewed in 1993 by Eleanor Swent for Western Mining in the Twentieth Century Oral History Series. The Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

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PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals, but not petroleum.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies.

We note with much regret the death of three members of the original advisory committee, all of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles. Langan Swent delighted in referring to himself as "chief technical advisor" to the series. He abetted the project from its beginning, directly with his wise counsel and store of information, and indirectly by his patience as the oral histories took more and more of his wife's time and attention. He completed the review of his own oral history transcript when he was in the hospital just before his death in 1992.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr., was the speaker. This section and the Southern California section provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview will add another dimension to the many publications about a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987. In 1990, he was inducted into the National Mining Hall of Fame, Leadville, Colorado.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the first group inducted into the National Mining Hall of Fame, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

Willa K. Baum, Division Head
Regional Oral History Office

Eleanor Swent, Project Director
Western Mining in the Twentieth
Century Series

December 1993
Regional Oral History Office
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J. Ward Downey, Mining and Construction Engineer, Industrial Management Consultant, 1936 to the 1990s, 1992

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Simon Strauss, Asarco, metals market analyst
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The Regional Oral History Office
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INTRODUCTION--by Pedro Campino

Mr. Robert M. Haldeman's accomplishments and realizations during a lifetime of dedication to the mining industry are responsible in many ways for the enormous and unprecedented prosperity of the Chilean copper mining industry over the last few decades.

In 1962 after graduating from the University of Utah as mining engineer, I first came in contact with Mr. Haldeman in the underground workings of the El Teniente mine. At that time I was a young trainee engineer in the early days of my professional development and the day I met him, it was in a ventilation level, over a grizzly at the foot of an ore pass. He was the president of the company and he was accompanied by a group of Braden Copper Company executives. He was an impressive individual as he is today, tall, with piercing green eyes, wearing a miner's hard hat slightly tilted to one side, rubber boots, a black plastic raincoat, and a carbide lamp over his left shoulder. He was indeed a very impressive individual firstly because of his position, also because of his appearance, and thirdly because of my very junior position. He came up to me, he shook hands, and he told me: "Pedro, I understand that you are doing very well but remember that you could do better."

Thirty-two years later as I look back through his accomplishments in life and also at my own professional development it becomes vividly apparent that his "live motive" in life was powerfully driven by exactly that very same thought. That is, that as individuals or corporations we might be doing things well but there is always room to do things better. Bearing that in mind, Mr. Haldeman has played a decisive role in the development of the most fundamental aspects of the Chilean mining industry which in recent years has also extended beyond our borders into the international mining industry.

Mr. Haldeman is beyond a shadow of a doubt the father of a particularly capable and successful generation of mining executives. Over the last thirty years, through his lessons and teachings he developed a generation of distinguished mining people that today are responsible for the successful management of world-class mining operations in Chile and abroad.

In my opinion, Mr. Haldeman's most far-reaching lesson throughout life was that related to moral and ethical principles. He taught me from early in life that there are principles that simply are not negotiable no matter what the circumstances are. Among these are the principles related to justice, equity, responsibility, tolerance, and mutual respect among individuals. These principles were so deeply seeded in the minds of his disciples that today they have become a way of life in the prosperous mining operations managed by those who had the privilege to belong to his school of thought. Indeed Mr. Haldeman has been a master teacher throughout life and his lessons and teachings will continue to be harvested for years to come.

Likewise in the technical aspects of the copper producing process, Mr. Haldeman became disenchanted with the conventional process of copper production: that is, mining, concentrating, smelting and refining, which up to the recent past was the conventional and most common way to produce metallic copper. The conventional process was capital intensive, high in operating costs, and environmentally unacceptable. For example, copper concentration is responsible for the generation of tailings which are difficult to handle and environmentally undesirable. In addition, smelting pollutes the air by emissions of sulphur dioxide and dangerous contaminants such as arsenic. Very early in his career Mr. Haldeman concluded that there should be a more economical, efficient, and clean way to produce copper. After painful and persevering research he developed the thin layer bacterial leach process which produces copper cathodes of great purity (99.997% Cu) by means of leaching, solvent extraction, and electrowinning. This new process avoids concentrating and smelting thus eliminating tailings and air contamination. Because the thin layer leach process is not capital intensive, is simple to operate, is low in operating costs and is environmentally most attractive, the world copper industry is currently adopting this process as a most desirable alternative towards low-cost production.

Mr. Haldeman's key to success and to a lifetime of long lasting accomplishments are in my opinion his privileged intelligence, his stubborn determination to rebel against the past in an effort to find better ways to do things, his firmness, and his nearly unbelievable capability to analyze situations. Undoubtedly those are remarkable qualities of his character. During his first marriage, his wife Doris was again an inspiration and counsel that we all learned to admire and appreciate. She was indeed a queenly lady who by her presence and personality drove us all to follow in her teachings and distinction. After her death Mr. Haldeman married Blanquita, again an inspiring and lovely lady of great talent and remarkable dedication. Her firm character, love, and devotion were instrumental in many ways to guide and to help Mr. Haldeman through a particularly difficult period in his life resulting from the nationalization of the copper industry in Chile followed by Doris' death. It was through her guidance and foresight that they adopted lovely little Alicia who has illuminated their lives and has once again brought happiness and joy to Mr. Haldeman's new life.

In summary, Mr. Haldeman has been through life a born leader. He has been admired by followers and detractors. Through his guidance and teachings he is undoubtedly the father of a highly successful generation of mining executives. He is responsible as well for the development of new processes that have allowed the world mining industry to succeed in this highly competitive market, allowing operations to survive in conditions where otherwise they would have failed. His contribution to the industry, to the environment, and to Chile as a mining community have simply been monumental.

From a personal standpoint, his teaching and his guidance through life, always under the theme of "doing well but could do better," have developed me from a young trainee engineer in the underground working of the El Teniente mine to the highest positions that a person can hold in the mining industry. I owe to my wife and to Mr. Haldeman all of my appreciation and gratitude for their guidance, support, and understanding during every step of the way throughout a highly successful career in the mining industry.

Pedro Campino
President, Compañia Minera Cerro
Colorado Ltda.

October 1994
Santiago, Chile

INTERVIEW HISTORY--by Eleanor Swent

Robert M. Haldeman's business card identifies him as "Vice Presidente, Proyectos Mineros S.A.," with offices in Santiago, Chile. This modest title does not even begin to suggest his importance in the history of Chilean copper mining since 1941 when he first went to work for Braden Copper Company, a Kennecott subsidiary, as a junior engineer recently graduated from the Mining College at the University of California at Berkeley.

His name had been on the list of suggested interviewees since inception of the series on Western Mining in the Twentieth Century, but it seemed unlikely that interviews could be arranged, since he resides so far away and seldom returns to the States for any length of time. Luckily for the project, however, in the fall of 1993 I was able to use a frequent flyer bonus ticket and accompany my friend Grace Bustos McKinley of Berkeley and her sister Matilde Bustos Hanger of Chapel Hill, North Carolina, on a vacation trip to Chile where they have many friends. (Their father was a Chilean diplomat who served in Canada, Washington, and at the United Nations.) I enlisted the help of Richard Stoehr, who had served on the board of Ranchers Exploration and Development Company with Haldeman, in arranging for interviews during the week that we spent in Santiago before going on south to the Lake District and Patagonia.

Chile is two hours east of Miami; my plane left Miami at 11 p.m. November 7 and arrived in Santiago at 9:30 a.m. Bob had graciously invited all of us to lunch the next day; he knew Grace and Matilde from his first years in Chile. We met him at the Park Plaza Hotel, which is near his office and home. The hotel's English name and decor made it easy to forget that we were in a Latin American city. It is on an avenue named Ricardo Lyon; the second word is pronounced in English.

Bob Haldeman is a tall, handsome man who wears a signature bow tie. I was apprehensive about interviewing after a tiring flight someone I had never met; his charm overcame any of my misgivings. We were soon at ease, as reminiscences and gossip were exchanged; although Santiago is a huge city now, the families at the top, where the Bustos family and Haldeman have their acquaintance, are few and mostly inter-related. We ate delicious salmon accompanied by appetizers and sweets from an abundant buffet, and fine Chilean wines. Afterward, Bob and I lingered over coffee and planned for the next day's interview.

The next morning I went first to his modern, tastefully furnished home at 2240 Concordia just off Ricardo Lyon, where I met his wife Blanquita, who had been a secretary and interpreter in the legal department of Braden before their marriage, and speaks excellent English. Bob's first wife, the mother of their three grown sons, died of cancer in

1977. Now he enjoys not only a second happy marriage but an idolized daughter, Alicia, whom they adopted as an infant ten years ago. He showed me a number of his paintings and the studio where he enjoys this hobby. Later in the interview he was restrained in his discussion of the Allende period, but I was moved when he told of the destruction of his own paintings that he had hoped to take with him out of the country.

We walked a short distance to 2260 Concordia where Haldeman has converted an apartment in a small building into a pleasant office suite. There is a study room for Alicia to use for homework, and many pretty photos of her on the walls. A guest towel in the bathroom is embroidered with "Te amo Papa." [I love you Daddy] Windows were open so we could enjoy the songs of birds and the perfume of flowers. He had propped up on a chair a large chart of copper prices through several decades to which he referred as he spoke.

I left at noon for a long lunch break, enjoying a walk through this neighborhood of embassies and good private schools before we resumed the interview from 4:00 until 7:00. Alicia telephoned when she came home from school, and her father's face lit up as he visited with her about her day.

My journal has this entry: "I had worried about the interview, but worry was wasted--he had made a good timeline plus outline and was beautifully prepared but not giving a memorized speech. All went like clockwork."

The following day, November 11, we interviewed again from 3:00 until 7:00. My journal entry reads, "He is well organized and prepared but of course we both got tired. I encouraged him to send his notes on 1971-1973, which are still in code, to the Hoover Institution. He didn't discuss that period much for me. He is a very likeable man and has had a fascinating career."

When I returned to Santiago two weeks later, we met again in the office to look at supplementary documents and photos, and then went with Blanquita to a nearby restaurant for an Austrian lunch. Haldeman discussed the coming presidential elections with interest and optimism.

My impression is that Haldeman's personal contentment as well as his success as an expatriate executive owe much to his skill at integrating the best of both the United States and Chile. He does not pretend to be anything other than an American (that is, a citizen of the U.S.A.) but he is at home with the Spanish language and with Chilean manners and customs. Haldeman rose rapidly to become at age thirty-seven the youngest general manager of Braden Copper Company. He was decorated twice with Chile's highest honor, the Orden al Merito, Bernardo O'Higgins; once with the rank of Oficial, and later as Comendador. He advocated the promotion of Chilean personnel to management of the mines before it was forced by law, and was able to remain on good terms with the host government. He returned to the States for a period following the expropriation of the mines, but later was asked back to reorganize the Corporacion de Cobre to form CODELCO, the government agency which operated the mines. This is the ultimate compliment to his management skills. [I was reminded of the similarity with Plato Malozemoff's story: his father was invited back by Lenin under the New Economic Plan to run the same Siberian mines he had managed before the revolution. See Plato Malozemoff, A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985, Western Mining in the Twentieth Century Oral History Series, Regional Oral History Office, University of California, Berkeley, 1990.]

He later held executive positions with Continental Copper, Minerec, and Pudahuel companies which involved him in various mining ventures in Chile, opening new mines and revitalizing old ones. In recent years he has led pioneering research in controlled bacterial leaching and application of solvent extraction and electro-winning in recovery of copper from sulphide ores.

This interview is significant for its discussion not only of copper mining technology but of management practice in a foreign country during peace and revolution, told by an insider who protected his company's interests in adverse conditions and was respected by his opponents.

The transcript of the interviews was sent to him for review, and he returned it promptly with only a few corrections. Pedro Campino, president of Cerro Colorado mining company, was clearly very much pleased to write an introduction to his friend and mentor. The interview was partially funded by gifts from colleague Arthur Kinneberg and Phelps Dodge Corporation. The tapes of the interview are deposited at The Bancroft Library.

Eleanor Swent
Project Director
Western Mining in the Twentieth
Century Oral History Series

February 1995
Regional Oral History Office
The Bancroft Library
University of California, Berkeley

Regional Oral History Office
Room 486 The Bancroft Library

University of California
Berkeley, California 94720

BIOGRAPHICAL INFORMATION

(Please write clearly. Use black ink.)

Your full name ROBERT MILFORD HALDEMAN

Date of birth JUNE 17, 1917 Birthplace DENVER, COLORADO

Father's full name ROBERT ALLEN

Occupation SALESMAN Birthplace LINCOLN, NEBRASKA

Mother's full name ALICE EVELYN

Occupation HOUSEWIFE Birthplace TYLER, PENNSYLVANIA

Your spouse BLANCA JULIA FERNANDEZ

Occupation HOUSEWIFE Birthplace SANTIAGO, CHILE

Your children GARY ALLEN, GLENN ROBERT, BRYAN WILLS and ALICIA BLANCA

Where did you grow up? MOSTLY IN CALIFORNIA

Present community SANTIAGO, CHILE

Education B.S. IN MINING ENGINEERING

Occupation(s) RETIRED

Areas of expertise MINING, MANAGEMENT, ACQUISITIONS IN COPPER, PRINCIPALLY

Other interests or activities FAMILY, PAINTING, GOLF

Organizations in which you are active AMERICAN CHAMBER OF COMMERCE, DIRECTOR OF NORTH LTD. (mining co), LOS LEONES GOLF CLUB, CHILE'S MINING ENGINEERS INSTITUTE

I EARLY YEARS AND SCHOOLING, 1917-1941

[Date of Interview: November 10, 1993] ##[1]

Swent: Let's begin, Bob, with where and when you were born and something of your early years and how you got into mining.

Haldeman: I was born in Denver, Colorado, on June 17, 1917, but I don't really remember it, because my parents moved to California when I was four years old. We lived in San Francisco through grade school, and then we moved to Los Angeles, and there I went through junior high school, high school, and junior college.

Swent: What schools did you go to?

Haldeman: The high school was Manual Arts, and the other one was Foshay. We had to move to Foshay because Manual Arts was damaged in the earthquake in 1933.

Swent: Was that the one they called the Compton earthquake?

Haldeman: The Long Beach earthquake. After I finished Los Angeles Junior College, I transferred up to the University of California at Berkeley and graduated from there in December 1939 in mining engineering. You might ask, "Why mining?" Well, my father died in an automobile accident when I was fourteen years old, and that was at the end of the Depression. Times were tough, and I had to work and so did my mother.

Swent: That was in '31? Times were really bad then.

Haldeman: Yes. When I was about fifteen or sixteen I had to work in summer and winter vacations, and I got a job once working as a money runner at the Santa Anita racetrack. [laughter] I had to take the red car line way out in the boondocks to Santa Anita, because that was in no-man's land.

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[1] ## This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

When I was sixteen or so, my uncle joined up with a rice grower in northern California who had money. My uncle was quite a promoter.

Uncle John Sandburg and Gold Dredging, 1936-1939 School Vacations

Swent: Was this your mother's brother?

Haldeman: Yes. John Sandburg--Swedish. In fact, he is the man who spudded in the fifth well in Signal Hill in California and made his fortune in oil--and lost it twice. Then he became friends with this rice grower in California who had money and convinced him that they should start gold dredging with draglines in shallow deposits, not these big bucketlines. So they started working up in the area of Redding, Red Bluff, and Trinity. I got a job in the summer working as an oiler on the dredge at $4.50 a day, all summer, and it cost me $1 a day for room and board. I was rich!

With that I was able to save money in summer and winter vacations and pay for a great part of my education.

Swent: What brand of dredges were they?

Haldeman: Dragline--just floating dredges.

Swent: Were they made there?

Haldeman: They were made in California--just a regular dragline you'd buy at any machinery sales agency. It was a typical one with pontoons and modular hinges. You could tear them down, put them on trucks, and move the whole thing in five days from one place to another. They were highly mobile.

That became quite the fad then, and it was making pretty good money. I became very interested in mining. I was studying general engineering, and that's how I wound up being a mining engineer.

That brings me up to the end of '39.

Dean Frank Probert, University of California College of Mines

Swent: Were there any teachers who were particularly influential or helpful to you?

Haldeman: Yes, one man who was the dean of the school, Frank Probert. I had a great admiration for Mr. Probert. He was a fine gentleman, a wonderful teacher. I remember the final examination in my final course in engineering in my last year was with Mr. Probert. He gave the class three problems, and we thought it was going to be a snap in a three-hour examination. I could only work one. [laughter] He passed everybody, but he just wanted to make sure that we realized that we didn't know as much as we thought we did, and we had an awful lot left to learn.

There were a couple of other teachers, but none were outstanding.

Swent: Did you get good grades?

Haldeman: I had about a 3.1 average. It was hard, but I enjoyed it very much. That was Berkeley in the old days, before Sather Gate, long-hairs, and all the problems with students.

Student Life During the Depression

Swent: Did you have time for any extracurricular activities?

Haldeman: No, I didn't. I had to work practically all the time. I never had a vacation until 1941. I had to work summers and winters, and weekends I caddied at golf courses to pick up some extra money. We had the WPA [Works Progress Administration] then, and I worked as a laboratory assistant in the metallurgical lab for fifty cents an hour.

Swent: Where was the lab?

Haldeman: At the school; I was the professor's assistant.

Swent: Where did you caddy?

Haldeman: Claremont Country Club in Oakland.

Swent: How much did you make caddying?

Haldeman: If I had one bag it was 75 cents, and two bags were $1.25. And very seldom I got a 25-cent tip.

Swent: Everybody was having a hard time.

Haldeman: That's right. I can remember very well those days. That's when they were promoting Rice Krispies and Corn Flakes. I used to go around at night when they delivered to all the apartments and student dorms these little boxes of Rice Krispies, they would put them in front of the doors. I'd get up at 4:00 in the morning with a bag--we had Rice Krispies for a month. [laughter]

Swent: It brought out your ingenuity, didn't it?

Haldeman: My last year in school I was living with two other fellows, and we rented an apartment. We figured it was cheaper that way, and we could cook our own meals. I think we lived six months of the year on cheese and peanut butter sandwiches and milk. Vegetables--nobody had time to cook. I think that one day a week each of us had the obligation to cook a warm meal--none of us knew how to cook very well, so it was quite a catastrophe. But I enjoyed it very much.

Swent: Who were the other fellows that you lived with?

Haldeman: One was Fred Hall, and the other was Joe Lipow. They are both still alive.

Swent: Have you remained friends?

Haldeman: Yes, with Lipow. I lost track of Fred Hall. I couldn't even tell you where he is today.

There were eleven or twelve of us graduating in my class at the University, and right after that we had Pearl Harbor. The last I heard from one fellow, after the war, there were only three of us alive.

Swent: That's a terrible toll, isn't it?

Haldeman: Terrible.

Swent: Evidently the poor nutrition didn't affect you.

Haldeman: No, not all. All kids are the same way. [laughter]

Swent: You graduated in December of '39. What did you do then?

Haldeman: I continued working on the gold dredges full time, simply because I couldn't find a job as a mining engineer. I went out to the Mother Lode country one summer and scrounged around there, stood in line behind ten or fifteen husky thirty-five- or fifty-year-old miners who had families, and I was just a college punk. They asked me what I was doing there, and they didn't look at me with very kind eyes, because they had many more mouths to feed than I did.

I just couldn't get a job. I went back to my uncle's company and worked there as an oiler on the gold dredge and then as a winchman. Finally, in the first part of 1941, I just decided that I had to get out of this rut. My mother had my diploma as a mining engineer, and here I was out in the bushes with a pick and shovel. That wasn't right.

Working in the Shipbuilding Division of Bethlehem Steel, 1941

Haldeman: I had a friend who lived in San Francisco. At that time the United States was gearing up and helping on the lend-lease--Mr. Churchill and the pre-World War II effort. This friend of mine was working in the Bethlehem Steel shipbuilding division. The government was financing the steel company to build cruiser and destroyer slips as part of the lend-lease arrangement with England. He was working on the part of the client as a cost estimator, in which he would check the number of square feet of forms, pounds of steel, and yards of concrete that the contractor was charging. The contractor billed for this, and he would have to go out and make sure that the billing was correct.

They were looking for another fellow, because the job was picking up speed, and they were on a crash program. I went down to San Francisco and asked for the job, and I got it. This was in South San Francisco in the shipbuilding division of Bethlehem Steel.

After six months I realized it wasn't anything to do with mining engineering, and I still wanted to get a job as a mining engineer. About June or July I went to the Ferry Building. The Mining Engineers' Society had an office there. The fellow who ran it, I remember, was named Newton D. Cook. I went to see Mr. Cook one day and explained my situation. I told him I was looking for a job as a mining engineer. He said, "Just a minute. Let me look through my files." He went through, and he said, "Yes, it just so happens that I have three jobs."

"Well," I said, "that's wonderful. Where are they?" Mind you, this is pre-Pearl Harbor.

He said, "One is in Guam, one is in the Philippines, and the other is in Chile." I asked what they paid, and he said, "Guam is $175 a month."

That was pretty good money then. The Philippines job was in the Soriani copper mines there; at that time they owned all the copper mines, and that was $175 a month. I said, "What about Chile?"

He said, "That's $200 a month," and I said, "I'll take it."

Applying to Work for Kennecott in Chile

Haldeman: I had a vague idea it was in South America, but beyond that I knew nothing about it. He said, "I'll write and tell you--," and he asked for my name and so on. Shortly in the mail I got this letter from Kennecott's employment supervisor, H. Otterstrom, with a whole bunch of papers for me to fill out, and it asked for recommendations, et cetera. There was a little folder that was very nicely presented on what was involved with the job, where I would be living, and what I would have to take in case I was employed there, which included khakis for the mine and a black-tie tuxedo. At that time all of the formal parties at the Teniente Club were black tie.

Of course, I only had one suit to my name, and that was the first good suit I had tailor-made in San Francisco. It cost me $45, and that was a lot of money then. That was when I was working with the shipbuilding division. I had a little money to spend, and I bought myself a good suit. I had that suit for years; I must have had that suit twenty years. [laughs]

Shortly after that my contract came with instructions and a train ticket. I took off in late September or early October.

Swent: Their office was in New York, wasn't it?

Haldeman: Yes. My cousins took me down to the train station, and my mother said goodbye with tears in her eyes. I had one foot locker and one hand bag. That was all I had to my name. I took the train and finally changed trains in Chicago to the Twentieth Century Limited from Chicago to New York.

Swent: Did you have your tuxedo?

Haldeman: No! I couldn't afford a tuxedo. [laughter] I figured I would just have to get by without it.

I got into Grand Central Station, and there was a black boy with a red hat on and a number on it. I told him I was in the Commodore Hotel, which was right above, and he took me up to it through all of the maze of underground New York. I popped into the reception desk, my reservation was there, and I went up to my room with my foot locker and my suitcase, and I looked out the window. I had instructions to go to the doctor first to have a medical check, and I was supposed to take the subway. Imagine a fellow who has been living in California in the gold mines trying to find a subway station from Grand Central Station.

After that report, I was to go down to 120 Broadway, which I did. Except that I got lost in the subway and surfaced, and I walked about thirty blocks to find the doctor. His examination was to tap my knee to see if my reflexes worked all right and to take my blood pressure. Of course, I was a young and healthy boy, twenty-five years old. It was a routine checkup.

Helen Otterstrom at 120 Broadway, New York City

Haldeman: I got back down to 120 Broadway and went in to see H. Otterstrom. I figured the H stood for Henry or Harry, and when I walked in, she said, "This is Helen Otterstrom." This was the first time I had seen a woman hiring for mining. She was a delightful person. My boat left two days later--Grace Line's Santa Elena, which was later sunk in the war as a troop ship.

Helen Otterstrom chatted with me for a while and said, "You're new to New York, and you know nothing about it?"

I said, "Absolutely."

She said, "I'll tell you what. I have to stay in town overnight"--she lived out somewhere in the suburbs, as most people do--"and I'll get us tickets for Radio City Music Hall and show you that." I had heard about it. She took me there, and my eyes popped out. The chorus line of a hundred girls, the hundred legs all in unison, and the beautiful building--I was impressed.

Meeting Mr. E. T. Stannard, President of Kennecott

Haldeman: The day I was supposed to go down and catch the boat, I had a call that I had to go by the office, because the president of the company, Mr. Stannard, wanted to talk to me before I left. Oh, dear, oh, dear; I was just shaking in my boots. I got down to the office and waited in the secretary's room for a few minutes. Then, "Will you please go in?" I went in, and there was Mr. Stannard, a great gentleman with gray hair, in his beautiful oak-lined office with rugs that I sank up to my ankles in. Here I am, going down as a junior mine shift boss at $200 a month; why does the president of the company want to talk to me?

He sat me down and asked where I was educated, and he was very, very cordial. I still didn't know what was happening. Finally he said, "I'm a very, very close friend of Claude Bowers, our United States ambassador to Chile. I want to send a gift to him, and I have some frozen turkeys that, if you don't mind, I will have put aboard ship in your name. I'll have somebody take them off when you get to Valparaiso."

I said, "Mr. Stannard, I would be delighted." [laughter] He said goodbye to me and thanked me very much, and that was the first time I met the president of the corporation.

Eighteen-Day Trip to Chile

Haldeman: So I got on the boat, and we started an eighteen-day trip down. Delightful. I guess there must have been somewhere close to 280 passengers on the boat. There were two shifts for lunch and dinner. I shared a room with a young American who was coming down in embassy service in Quito, Ecuador, a very nice chap.

We left the dock around four or five in the afternoon, and we went past the Statue of Liberty. We were out on the deck, and it was just like a teacup--wonderful. Then we got out into the Atlantic. This was in October, and the Atlantic was not as quiet as it usually is in the summertime. Came the seven o'clock gong for the second shift at dinner, and the two of us were just as hungry as we could be, with the salt air and everything. We walked into the dining room, an enormous room with all these tables, and there must have been twenty-five or thirty young waitresses there.

There were four other people in this dining room. We walked in, and the girls were smiling. Two of them came up to us and said we were at table so-and-so, and they sat us down. I asked if we were early or something, and she said, "No. Most of the people are a little bit ill in their rooms." [laughter] I picked up the menu, and she said, "Pardon me," and took the menu off the table. She said, "You have about fifteen young ladies who are going to take care of you, and we're going to serve you everything there is on the menu. Don't eat too much of each plate." We had the most wonderful time.

Swent: And you didn't get seasick?

Haldeman: No, I was too excited and enthused. About the third day, the dining room filled up. [laughter]

It so happens that on that ship was a South African man about fifty years old who had married a Chilean lady of about thirty-five. They were just returning to Chile from their honeymoon in England. His name was Bill Bailey, and her name was Irma. They were delightful. They found out that I was going to work for the company, and he was the second man in the controller's department. So she singled me out, talked to me, and introduced me to her husband. He was a very nice fellow.

She asked me if I knew any Spanish, and I said, "Absolutely nothing."

She said, "Well, I'm going to give you Spanish lessons," so I had eighteen days of Spanish lessons. It was delightful.

We stopped at every port on the way. At Antofagasta they had a race track, and we got off and watched the races. In Guayaquil I said goodbye to my friend, and I went ashore and looked around the port. We were four or five hours in port, loading and unloading. When we got to the port of Valparaiso, this fellow Bailey, who was an avid golfer, found out that I played golf; I used to teach golf at the University as one of my part-time jobs. He was in a clique of South Africans and Britishers, and the two fellows at the port were British and were very good friends of his. They had a golf course at Granadilla there.

We got to Valparaiso about five or six in the afternoon, and I had instructions to take the train to Santiago. The port agent was going to tell me, and I would meet the agent in Santiago, and there was a certain way to take a taxi and so forth. I had to be back the same afternoon to go to Rancagua on the train and take the rail car up so that I could go to work the next day.

We get in there, and Mr. Bailey meets his friend Red Nelson, who is the port agent. "How are you? This young boy is going to work at the mine."

"Oh, very nice to meet you. I understand you are coming in and we will take care of your things."

Bailey says, "You know, this chap plays golf, and I understand he's pretty good. Let's get a golf game tomorrow."

He said, "Fine. I've got somebody else who can play, so let's have a foursome."

I said, "I'm sorry, but I have instructions to go up--"

Bailey said, "You're going to get sick tonight."

"But I have to meet Charlie Palmer, the office manager in Santiago."

"We'll call Charlie, and we'll tell the mine that you got sick on the boat. You've had a real rough time."

Here I am, sure that I'm going to be fired, but that's the way these guys worked, because they were high enough up that they could take these latitudes with what they did.

They invited me to dinner that night at a brand-new restaurant, Cap Ducal. Today it still exists and has been remodeled. It's built on a promontory of rocks right alongside the big hotels. They were going to treat me to a very special seafood. Oh, my. I went to the hotel, and they picked me up. We drove over to the restaurant, and it was very nice. We sat on a little terrace outside, the waves lapping. He said, "We have to have a pisco sour."

I thought, "Very nice." The first dish was *erizos*.

Swent: The one thing I can't swallow. [laughs]

Haldeman: I said, "What are those?"

He said, "In English they call them sea urchins. They're wonderful." They brought this first course out, and by this time Mr. Bailey had had three pisco sours, and they were on the white wine. I looked at the *erizos*, and I could smell iodine. They looked to me like they were a diseased lung. [laughter]

I looked at my companions, and they said, "Don't touch it; you have to fix it up. You take some finely diced onions, some diced parsley, and you sprinkle it like this." As I was doing that, I noticed this little black crab--*cangrejo*--on the top of this thing started to move.

I said, "Hey, what's this?"

He said, "Oh, that's the best part. That you start first."

Well, I put all of this stuff on it--onions, parsley, lemon juice, and oil. Then I said, "Mr. Bailey, if you don't mind, I'll let you have this *cangrejo*," and I put it over on his plate (this little thing was trying to get off the spoon). Have you ever seen them eaten?

Swent: Oh, yes. I tried once. I couldn't swallow it.

Haldeman: I took a spoonful of the *erizo*, chewed it, and swallowed it; and it stuck, halfway down. So help me, I started to turn pale and perspire, and I didn't know what to do. I finally got the thing down. It took me another fourteen years to learn how to eat *erizos*, and I love them now!

So I played golf and had gin and tonics, and played more golf and had more gin and tonics, and finally got up to the mine.

II WORKING FOR BRADEN COPPER COMPANY AT EL TENIENTE MINE, 1941-1951

Getting to Sewell

Swent: How did you get up to the mine?

Haldeman: I took the train to Santiago, and I met the manager, Charlie Palmer, and said hello to him. He got me on the train to Rancagua.

Swent: What kind of train was it?

Haldeman: A regular train. In Rancagua I had to wait a while and catch the rail car. It was a narrow gauge railroad built in 1915 or 1920. It was seventy kilometers from Rancagua up to the mine in Sewell. If the railroad had one, it had a thousand curves in it, and the train had one of these old side-drive logging steam engines. They bought them from Washington and Oregon, took them down to Chile, and put little cars on them. It was like a Toonerville trolley, with seven or eight cars. They'd slowly go uphill.

The train took four and a half hours, and the rail car was nothing but a truck chassis with a Ford motor in the front, and then they put steel wheels on it that they made in the foundry there. Then they put a canopy cover on the thing with isinglass windows that you took off in the summer and put on in the winter. It had five rows of seats of four each and a driver. That took two hours.

So I got up to Sewell late in the afternoon.

Swent: How high is Sewell?

Haldeman: Seven thousand feet. I walked from the railroad terminal to the mine staff house, which was near the mine portal.

Swent: (He's pointing out these locations on a picture of Sewell that is on the wall.)

The Three-Year Contract

Haldeman: I stayed there for three years; I had a three-year contract.

Swent: That was the standard contract, wasn't it?

Haldeman: Right.

Swent: They paid your way if you stayed the full three years?

Haldeman: No. They retained 20 percent of your salary every month for the first eighteen months, in case you quit early, and that compensated them. Then you had to pay your way back.

My first three months in the mine--and this was standard with all the foreign shift bosses, gringos--

The Practicante, or Training Period

Swent: There was three months of the *practicante* period?

Haldeman: Yes. That meant you were assigned to be a timberman's helper, a miner's helper, and a trackman and a pipeman's helper, knowing no Spanish whatsoever. All the workers there were on piece rate; every bit of work that you did was measured, and you got paid for that. You could make 50 to 100 percent over your card rate with a good helper. Of course, when they got the gringo, who couldn't even understand the orders they would give, they were very disgruntled and unhappy, because they were just able to get their basic card rate; they couldn't get any bonuses on contract.

It was hard work. The shifts were an hour in, an hour out, and eight on--ten hours, and you came out just completely pooped. I was staying in the mine staff house with twenty other American and Canadian shift bosses. The food was Chilean style, with a lot of cooking oil in it. The eggs and bacon in the morning were not like my mother made. Instead of an egg cooked in butter and a strip of well-cooked bacon, it was served in a little aluminum dish that they called a *paila*, it was floating in oil, and the bacon was half-done. Of course, my stomach didn't appreciate this, and for three months I was just miserable. All of us had it.

We took in lunch, which was an empty gin or rum bottle full of chocolate milk, an orange, and a ham sandwich on Chilean bread--*hallulla*, the heavy, unleavened bread. It felt like I had a brick in me every day, and with the hard work it was miserable, no question about it.

But it was a wonderful way to learn what an eight-hour shift meant--how much you could do and how hard the work was--because after three months you started out as the boss. You had to be a fair judge of whether the fellow did a good shift or whether he was knocking off or trying to get out of doing hard work on a day's labor.

Swent: You really knew.

Haldeman: You absolutely knew. After being a timberman's helper, then I became a timberman and had a Chilean helper. During the lunch hour in the mine, you could sit down right where you were working, in the drift or wherever it was. The Chileans wanted to know how you say all the dirty words in English, and they would teach me the words in Spanish. [laughs] Of course, after six months my Spanish was becoming fluent, but, oh, I couldn't use it in social circles; it was really rough language.

The Chilean worker was very respectful of the gringo. They would have fights among themselves. They had knives, and they would roll their jacket around their left arm, take their knife, and hack at each other. But I could walk in between them, push them apart, and say, "No. If you get cut up in the mine, they're going to fire you. Don't lose your jobs." They'd never touch me. We gringos were always "Mister"--"Mister Haldeman." [pronounced "meestur"] A high respect for the gringos, so it was very nice. Of course, the nicer you treated them--you had to be very stern with them, but if you treated them fairly, they would work their hearts out for you. I just have to take my hat off to them.

They're very ingenious people, too. They just never had the tools or the education to be smart workers--which they are now. They're coming around; the educational system has improved in Chile.

Swent: Where were you in the mine at that time?

Haldeman: We were way back in there, just like the square wheel that is undercutting directly on top of timber, heavy ground. We had quite a big labor force, about three or four thousand underground alone. After we modified the mining system, putting a solid block in between the undercut level and the draw level and ran finger raises up through it, a different type of mining, we cut the labor force down to maybe a thousand or nine hundred, about 25 percent of what it had been before. There you didn't have all of this heavy timberwork and maintenance and the likes.

Swent: What kind of machinery were you using?

Haldeman: Oh, just standard stopers. They didn't even have the jacklegs then; you just took the hand drills and held them up yourself. The jackleg came in later on.

Swent: The equipment was mechanized, though?

Haldeman: Oh, yes, we had air and all that. But ventilation--forget it. When I was in there they had dry drilling in half of the mine, and I have partial silicosis from that. We were a highly silicotic mine, if you want to put it that way. As time went on we had modern safety measures put in. The Chilean legislators started putting heavy fines on industrial illnesses, sicknesses, and diseases, including silicosis, and management perked up and started to clean up the air.

Swent: When did that happen?

Haldeman: It was gradual, and maybe the mine fire precipitated a lot of it.

Swent: Ventilation particularly.

Haldeman: Yes, absolutely. That's about the time it started to take off. I would say we went to wet drilling at the time of the mine fire.

Swent: That was in 1945.

Haldeman: Yes.

World War II: Copper Mining as Part of the War Effort

Haldeman: One of the strange things about fate--here fate comes in. In September of '41 I took the job, Pearl Harbor came in December, and immediately after that Guam and the Philippines were invaded.

Swent: You were kind of glad you weren't there.

Haldeman: Yes. Fate also took a little bit of a role in that 1941 period, because when I went to work in San Francisco I was also registered in the draft. I was 1-A, and I said I wanted to be a pilot. They had this program they were starting with 50,000 planes and 50,000 pilots a year, when they were starting to mass-produce airplanes. I went up to Hamilton Field, north of San Francisco, and passed the examination there to become a pilot, a lieutenant in the air corps. I was on a standby basis there.

In 1942, I got a call to report to Hamilton Field, that I had been accepted in the air corps, and they finally had enough airplanes. I took this letter over to my boss at the mine, he gave it to the mine superintendent, who gave it to the general manager, who sent it up to the New York office, who had at that time declared to the government that they needed so many people down there to get the copper as part of the war effort. So myself, along with the other boys, were classified as 4-F and frozen in our jobs. The fickle finger of fate.

A Nearly Fatal Accident in Bad Air

Haldeman: From '41 to '44 I started working hard. In 1942 I almost disappeared from the map. I was going up to check a chimney raise we were running about thirty meters up; they call them a zigzag. It's about a 50° angle, and you go zigzagging up. Then you ran a drift thirty meters high into an area of a block-caving that had failed to cave. It was all hung up in there, and we wanted to find out what was wrong with it. The night shift put in the log book that they had broken through to this cave area. The rule was that the shift boss had to go ahead of everybody and make sure the working areas were safe.

So I took my number one head straw boss--*capataz*, they call them--and the two of us went up this ore pass hand-over-hand, on a big one-and-a-half-inch manila rope. We always carried carbide lamps, because of possible oxygen deficiency. This ore body was made up of copper minerals and had a lot of pyrite in it. Pyrite oxidizes when it's exposed to air and consumes oxygen. You'll get in places where there is oxygen deficiency, and your lamp will go out. Going from 16 to about 12 percent oxygen, the flame grows real large, and then pffft. That's the point where you have to get back where you were; otherwise you will faint. And that's why the bosses always wore carbide lamps.

I was shinnying up this thing, with my friend behind me. I can remember that my flame all of a sudden went pffft, and I can remember my head going down gently on the floor of the drift. I fainted and tumbled back into his arms. He went to grab me, and I was so heavy with only one hand [free], both us went head-over-heels, bouncing down this thing.

At the bottom, when we get out on this drift, there's a 60-meter open ore pass below us that has two track rails across it, where they have little one-ton cars that they can push back and forth. I didn't quite get there. There were what they call spuds, two-inch steel about twenty-inches long. You drill a hole in the rock and put two of these in with a board on top, and you can set the rig up to drill the next blast. They keep carrying this, relaying it up.

One of these spuds was there, and it happened to catch me on my shoulder--here, you can see.

Swent: You still have the scar.

Haldeman: I hung up there, and my hard hat continued down. There happened to be a workman passing by that ore pass and that drift, and my hard hat went "tic, tic, tic," down with my lamp. Well, he knew something was wrong, and he went and got another boss. They came and saw me up there, and my friend was hung up, too; he was unconscious. They pulled us out and got us over to the tool shed--they call it a *bodega*, an underground tool shed--where they had first aid and a stretcher. First aid was like a bandage.

I lay there in pain. What the fellows had done was to put a bandage around me like this [demonstrates], and of course they pushed the bone in. When you have a broken collar bone, you're supposed to pull back and get the bones away. I was a horrible mess; my eye was all gouged, and I was scratched up all over. I felt like somebody had been beating me to death. The mine superintendent finally showed up, and he said, "Get this bandage off," and he pulled my shoulders back and tied them back. Oh, it was a wonderful relief.

They took me and my friend, my *capataz*, out to the hospital. I had a fractured collar bone, and they set it. I had a gouge out of my right upper eyelid, and for almost half a year I couldn't sleep; I could see the light out of that little hole. I was out of service for about a month and a half. We were so very close to being killed. My friend, the *capataz*, in his fall somehow completely tore his tendons on his right arm and shoulder. They couldn't repair them, so he lost the use of his right arm. But he was alive.

That was in '42.

Swent: I'm surprised that when you fell you didn't regain consciousness when you got better air.

Haldeman: Well, I knocked myself out; my head was banging all over. I had bruises and scratches on my head. I looked horrible; I have a picture somewhere.

Now comes 1944 and the end of my contract.

Swent: Were you already married by the time this accident happened?

Haldeman: No, I was single. Comes '44, and now I'm a foreman getting $528 a month. Wow! And of course promotions and raises came, just to keep the boys happy, because we had to get our quota of copper out.

Extending the Contract and Getting Married, 1944

Haldeman: I had had enough of it. I went in to the mine foreman, Mr. Casarotto (Mr. Casarotto is another story; he's quite a man, I'll tell you), and told him I was not going to renew my contract. "Well," he said, "Let's talk, Bob. Now, what's your problem?"

I said, "No problem, but I've just had enough. I would like to go home."

"What are you going to do, get a job?"

"I'll find a job."

"Do you have a girlfriend back there?" He knew.

I said, "Yes. I'll go back now and marry her."

"Well," he said, "look. If that's the problem, we'll bring her down for you, and we'll give you a two-week honeymoon in Viña. You can stay on, and we'll give you a house--one of those houses up there [points to photo]. How would you like that? Would you sign another contract on that basis? Furthermore, I'm sure you're going to get another promotion. I've already asked for your salary to go up to $650 a month."

Who am I to turn down a wonderful offer? [laughs] Here I am, still in Chile. I called up my bride-to-be, Doris, whom I had only known for three or four weeks before I left for Chile. I met her on the Russian River, and we corresponded. It took me three days to get the call through, because in those days part of the lines were physical lines--copper and steel wire on the surface; we didn't have any satellite. I finally got through to her, and I said, "Would you like to come to Chile and marry me? They've offered me another contract."

She didn't answer. I kept asking, "What's the matter? Is the line cut? Operator! Operator!"

Finally she said, "I'm still here, but I'm crying."

I said, "Well, what's the answer?"

She said, "Yes." So she came down.

Swent: You got married down here and stayed here?

Haldeman: Yes. We moved up to the house up in the town site.

Swent: Did you have the two-months honeymoon?

Haldeman: No, two weeks. I was supposed to have a two-week honeymoon. My wife went across the states by train and went to the New York office. It so happened that the mine superintendent's wife was coming down at the same time, so they arranged for the two ladies to travel together, by air this time. It was Panagra at that time, a Pan-American Grace line. They were DC-3s, and in 1944 passengers were subject to off-loading because of war priorities.

Swent: The planes didn't fly at night, did they?

Haldeman: No, it was all day flights, because it was instrumentation landing; that was way back in the square wheel days. [laughs] They calculated that it took three days to get here. On the second day, the mine superintendent called me up and said, "We're going to go down and meet our wives, so I have my special rail car here." He had a special management car. He said, "I want you to be at the station this afternoon at a certain time, and we're going to go down. I have hotel rooms at the Crillon." Okay.

So we went down. This man, Jack Withers, was a real nice guy and a good miner, but he had a problem with the bottle; he drank an awful lot. Most of the people at that time in the mining business were pretty heavy drinkers. We got down to Santiago, and the next day--the third day--I got a call from him at seven in the morning at the hotel. He said, "You call the airline and find out when the girls are arriving." So I tried to get through to the airline. It so happened that the airline didn't answer me until just about one o'clock, and they told me they had been off-loaded in Panama. They weren't exactly sure which plane they were scheduled out on.

"All right," he said, "if that's the case, let's go over to the restaurant on the central plaza, the Bahia, and we'll have lunch. It's the best restaurant in town, and I'll buy." Well, with the cocktails and the like, I had to take him home in a taxi and put him in bed. This happened five days in a row. The girls were off-loaded later on in Quito, and then in Lima.

Finally they arrived. Then we went up to Sewell and got married by the *Registro Civil*, the civil registry--a legal marriage, not a church wedding. Then we went down to Viña. So for two weeks' honeymoon, I spent half of it with the mine superintendent and the other half with my wife. [laughter]

Swent: Anyhow, the marriage lasted well.

Haldeman: We went up to the house, and I had bought a bed from a family who was leaving and had stored it in the mine staff house basement. I told the *mozos* there--the boys who worked in the place--to have it put in my house to be ready when I came. We walked into the house, and I went into the bedroom, showing my wife around. It was a very small house; they're all the same size and shape, painted the same colors, and they had some company furniture that was just as rustic as it could be. It was nice and well done, but it was very functional.

Here's the bed, flat on the floor, no legs on it, no bedstead. My friends in the mine staff house had gone away with them. [laughs] I had a trunk that I had bought, and that trunk was in the living room. On top of it I had a lamp. I had choapinos, little throw rugs made by the Indians. That's how we set up our house.

I called up the mine timber-framing shed. All the mine timbers were 12 inches by 12 inches by 6, 7, or 8 feet long. I had them cut out four blocks a foot long and bring them down to the house, and that raised the bed for a month until I could get the guys to give me the rest of the bed. [laughter]

Swent: This was one of those tricks they played on honeymooners?

Haldeman: Yes. Little bit by little bit my job was a little better, a higher boss.

Swent: I'd like to ask you a little about your wife's adjustment to Chile. Did she learn Spanish?

Haldeman: Yes, she learned Spanish. Not completely, but she learned it and got along real well.

Swent: She enjoyed it here?

Haldeman: She was a very adaptable young lady here. She fit in well. Finally, when I got to be a general manager, I was very proud to have her as the general manager's wife.

Swent: It must have been quite an adjustment for her.

Haldeman: No, she enjoyed it. She is very adaptable. A very nice girl, and we got along fine. During my first contract from '44 to '47, we had two boys, and then one was born in '49.

Swent: Were they all born here?

Haldeman: In Sewell, in the mine hospital.

During our first year of marriage, in 1945, we had the mine fire.

The Mine Fire, June 1945

Swent: It was in June of '45, wasn't it?

Haldeman: Yes, and you have interviewed Mr. Reed on that and got all the particulars.[1]

Well, it just so happened that Mr. Burney Egemo was one of the three American bosses who died in the fire. Because of his outstanding ways, he was a leader, and management had its eyes on him as going up to superintendent.

Swent: He was captain of the football team in Lead High School when I was in high school; I was behind him, and his sister was in my class. We all idolized Burney. He was a leader.

Haldeman: Yes, he was; a very nice fellow. He married a Chilean girl, Sadie Eichelbosch, a very charming person. Burney had trouble with his teeth; I think they called it pyorrhea at that time. The dentist decided he had to have them out; it was about the third time he was having some out. He didn't want to miss shift, and he got in and was on the level where the majority of the people were killed. Had he not gone in, I would have had to replace him. I was on the level up above, and we walked out of the mine with a cloud of smoke behind us about twenty meters, and the rats running alongside in the drainage ditch, scurrying out.

That was a tragedy, and 364 people died in the fire. But fate again came into my life: I didn't have any apparent competition for going up in the mine organization.

We go along from '44 to '47 with another contract, and from '47 to '50 there's another contract. I had a third boy then, and by that time I was just going up to the top job in the mine. I was a mine foreman, and from there I was assistant general mine foreman in 1951. That would be number two to Mr. Casarotto.

General Mine Foreman Pedro Casarotto

Swent: Casarotto was a Chilean? Why don't you tell me about him?

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[1] For more on this subject, see John Reed, Pioneer in Applied Rock Mechanics, Braden Mine, Chile, 1944-1950; St. Joseph Lead Company, 1955-1960; Colorado School of Mines, 1960-1972, Regional Oral History Office, University of California, Berkeley, 1993.

Haldeman: Mr. Casarotto was an Italian immigrant who went from Italy to the United States, California, and started to work in the Guasti vineyards. I think it was in the late twenties that the IWW [Industrial Workers of the World] was formed--the wobblies. They were called communists, and they formed unions. They had Pinkertons breaking them up.

Mr. Casarotto, who had never gone beyond the third grade, was involved in this. The police were after him, so he went down to San Pedro, California, and got a job on a nitrate ship returning to Chile. When he got to Valparaiso, he jumped ship, went out to Rancagua, and hired on as a laborer--*peón*, they called them at that time at the Teniente Mine. He had a brass tag, and that was his work number. He went up to the mine, and in those years the mine was a good place to run away from justice. Not too many questions were asked, just to get guys to work in the mine, which was a hard place.

Casarotto started out as a laborer, then became a timberman, a miner, and worked up to become a straw boss. He was outstanding; he was a leader--a big, husky Italian. I'm not sure of the year, but in about 1935 they needed a general mine foreman. From mine foreman, the next step up was in the superintendency, and usually that job had been filled by Americans. The mine superintendent at that time didn't feel that he had any Americans qualified below that level in the mine, and Casarotto was a real good, reliable fellow, a reliable worker, and intelligent with his limited education.

So the mine foreman called the general manager, Mr. Turton, and said, "I have a fellow who is Chilean of Italian descent, and I want to put him in as a general mine foreman."

Turton said, "I'm going up to the mine next week. Wait; I want to talk to the guy first." When Turton got up there, they called in Mr. Casarotto. Turton had heard of him, and he talked to him and asked, "Do you think you can handle the job? What's your name?"

He said, "My name is Inocencio Casarotto."

Turton, who grew up in the mine, a blustery, great big fellow, macho and all that, said, "Inocencio? I would never have a general mine foreman by the name of Inocencio. From here on out, you are Pedro Casarotto." [laughter] And until the day he died, he was Pedro Casarotto.

Pete was a wonderful educator or trainer of young mining engineers. He knew how to really get the maximum out of you--give you real difficult tasks, delegate you all the authority, and allow you to make a couple of mistakes. He trained so many of the people in the industry.

That's Mr. Casarotto, and he is really the fellow to whom I owe my understanding and knowledge of underground block-caving mining. Pete really pulled me out of the ranks. He took a shine to me and pushed me up and up. Sometimes he would jump me two positions to replace a man and left me alone. It certainly develops you when you are fully responsible for something like that. [laughs] You're sharp.

In those days there were thousands of timbersets and hundreds of ore passes in places all over the mine. All of us working in the mine at that time developed a memory of the numbers of these sets, the pieces of wood in each set and in between the sets, the drift numbers, and so on. I could sit down and see the mine in my mind at night. Somebody would call me up, and I could get a visual picture of that set or two sets, in between them, how many stringers there were up above, and which ones were broken. It was a tremendous teacher. All the rest of it we learned that way. It was a wonderful training school.

So that's Mr. Casarotto. Now, where was I?

III ASSISTANT GENERAL MINE FOREMAN, 1951

Far-Reaching Effects of a Plane Crash in Canada, 1950

Swent: You were assistant mine foreman in 1951.

Haldeman: Yes, I was being considered for that. In 1950 comes another act of the fairy of fate. Kennecott's Mr. Stannard, who I met when I first came down, plus two of the key executives were getting along in years, and the board of directors said, "You have to replace yourselves with younger people."

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Haldeman: At that time Kennecott had acquired controlling interest in a mining company in Canada, Quebec Iron and Titanium.

Swent: You were working for Braden Copper Company, which was a subsidiary of Kennecott, so it was natural for them to turn here--?

Haldeman: Yes. They had a reorganization policy that the board had insisted on that they get some younger people in the top positions. The incoming executives, with the outgoing executives, took a plane to fly up to Canada. On that plane was the wife of a postman who was fed up with her, and she was going up to visit some relatives in Quebec. He put a bomb in her suitcase.

Swent: Oh, I didn't know that caused the crash.

Haldeman: They all went down--the wife and all of the outgoing and incoming executives; Stannard was one of the outgoing and Frost was one of the incoming. Kennecott was absolutely decimated; they had nobody to run it.

Swent: To this day most mining companies don't send all of their executives in the same plane.

Haldeman: That's exactly the reason; that started the policy.

Swent: It was a terrible thing. When was that?

Haldeman: It was 1950.

Charles Cox was taken from a steel company; I don't know if it was U.S. Steel or not. He was a financial man, and he was brought in as president. I think a year later he picked up Frank Milliken from New Jersey Zinc and put him in as number two man.

Growing Awareness of the Political Situation in Chile

Haldeman: Let me go into the political side of the story. About this time, I'm getting up in management, and I'm becoming very aware that there is a growing movement in Chile to say that the copper should be in the hands of the Chileans. This is a backlash imitating what was going on over Latin American oil in Brazil with Petroleo Es Nosso and in Venezuela. The oil companies were trying to negotiate a graceful exit. This was the anti-capitalistic theme, and that's when the left-wing parties--the socialists and the communists--started to become very important. They believed that the countries should own their own natural resources. This is going to be threading through the story as we go along. It began to have more and more effect on mining and my involvement in the company.

Charles D. Michaelson

Haldeman: It's now 1951, and Mr. Milliken hires a Mr. Charles D. Michaelson, who had experience in Bolivia with the Patino group and in Cuba with a nickel company. He sent Mr. Michaelson down to Chile to train to take over Mr. Turton's job. Mr. Turton also was about the age of Mr. Stannard, and Turton had never really prepared any number two man young enough. He grew up with his cronies and stuck with them. He was the old, old school: "That's the way we do it," and "the rock in the box" thing. Forming management groups ten years apart for succession was something he didn't bother with; that wasn't management at that time.

Mr. Michaelson came down here, and I think his job was general superintendent of operations, or about at that level. He saw that there was nobody below him, so he started to look around the company. After he got oriented, he started inviting me to have a martini in the afternoon and asked me about the mine. The next thing you know, I was called in by the manager. I was told afterwards that Mr. Turton had also put an eye on me. He said he liked me because I also came from the mine; he was a mine man, and that had a lot to do with it, then.

I was taken out of the mine as number two to Mr. Casarotto and put in as assistant to the general manager, in training. Well, that was a title that was created, and I was working under Michaelson's wing. In 1952, after four or five months of training, they named me as general superintendent of operations and Mr. Michaelson as assistant general manager. I had to go around and learn what the smelter was like, and the shops and the railroad and so on.

IV GENERAL SUPERINTENDENT OF OPERATIONS, 1952

Learning Diplomacy

Haldeman: All of the departments were managed by Mr. Turton's old cronies and buddies, and each man had a little empire. They just didn't think anything about this young whippersnapper who was coming around. I had to sit for an hour in the mill superintendent's office, waiting for him to receive me and then sit back and say, "What do you want to know?" I remembered Machiavelli's book and the rule that the new prince always decimates the other princes and puts his own people in. So I had to start, bit by bit, to assume management. I was the general superintendent, and these fellows had to report to me. It took an awful lot of diplomacy.

Swent: Had you had any formal training in management?

Haldeman: In those days management was not what you call management today--Harvard Business School and management classes in universities. No, I learned engineering, mining, geology, and metallurgy, period. I never had a course in management, much less a course in politics, an area I will get into.

Swent: Had management even been mentioned as something that you would need to be aware of?

Haldeman: In the fifties, Harvard Business School suddenly became important in all of the business world. Prior to that, businesses were run by old-time managers. It was only in the forties and the fifties there was a sudden awareness of industrial engineering and the likes that became a tool of management. Then came all of these management training schools. This all started about the time I was stepping out of the mine and into management with absolutely no background in it. Nobody else did in the company. [laughter]

Swent: You were so isolated up there, you probably weren't aware of the domestic politics either.

Haldeman: No, absolutely not. I was isolated in the mine, with American town sites, American management, and I wasn't aware of any politics going on.

General Manager Franklin D. Turton

Haldeman: About this time Mr. Turton passed away. He died at Coya, the town where the management office was. Mr. Michaelson had to go to Santiago to take the head job. Turton never wanted to. Stannard tried to get Turton to go to Santiago, and he built a building there with an apartment in it. But Turton had a beautiful house in Coya with a big garden and fruit trees. He was out at the mine, and he said, "I'll go to Santiago over my dead body," and that's exactly how he went. He died of a heart attack while he was out in the garden, propping up his fruit trees after a windstorm.

Turton was a character and a wonderful man. He built up the company. We used to have nail factories and made our own stationery and form books and everything, because you had to be independent to do it. Sometimes it took eighteen days by boat to get instructions down from the United States. You can't run a company that way. Sometimes the telephone didn't work; sometimes the manager had so many problems that he didn't answer the telephone. [laughs] There wasn't any fax or anything like that. Those were different days. We even made our own coffins. You had to be self-contained.

A Self-Contained Camp

Swent: What about health care?

Haldeman: We had very good medical service. It was excellent. We had what they call "womb to tomb" philosophy in everything; paternalism to the nth degree.

Swent: Company doctors, company hospital--

Haldeman: Everything. A hospital in every town site. We took care of all of the people. We had some excellent doctors, all Chilean staff. We imported, without any question as to cost, everything they needed. Many people in Santiago would call up and ask if they could send their kid up to Sewell to have him operated on. So did Anaconda, because we both had to be self-contained. The Chilean national health service--government socialized medicine--at that time was very substandard.

So we did a very good job on that. The company always did and still does today.

Swent: You had your own schools, too?

Haldeman: We had public schools there, and for the foreigners we had the Calvert system. My boys went to the Calvert school in the mining camp, and when I moved to Santiago we put them into a British boys' school, the Grange.

Swent: Did your wife teach, or did you hire teachers?

Haldeman: No, the wife of the safety director, the wife of the mill superintendent, and the wife of this and that who had experience in teaching before in their lives took over the teaching jobs. They did a real good job.

Swent: Did the company pay them?

Haldeman: Yes, a modest, nominal sum, and gave them all the equipment they needed. And we gave all medical and other paternalistic services to the teachers that the government sent to the public schools, and we helped them out with supplies, because the government was short on that, too. There are an awful lot of indirect subsidies that you have to get along with. We also had quarters for the police force; we gave them housing. We had 18,000 people in our town sites, and we gave them everything, plus all the 18,000 complaints that you can imagine. Everything you get for nothing is not very good. If you have to buy it yourself and take care of it yourself, it's not bad; even though it's lousy, you don't complain. [laughs]

Swent: So now as superintendent you were getting into all of this.

Haldeman: Oh, when I got into management, the women used to call me up and say, "The welfare department hasn't changed the light globe in my basement now in three weeks." Oh, dear. And I'm supposed to be taking care of producing copper.

Relations with Anaconda Copper Company

Swent: You mentioned Anaconda--did you get together at all with the Anaconda management to discuss problems?

Haldeman: No. We were competitors, although friendly competitors. A lot of things Anaconda did, we didn't agree with eye-to-eye, so we would have to let them go their own way. They played a lot more politics than we did. And, of course, we were isolated. The offices in Santiago, sure, they got together. You're always listening with one ear and trying to hear the conversation on the other side with the other ear. We were not against or have any fights with Anaconda except in the last days, when they were very bitter at us for our selling 51 percent of the company to the Chileans. I'll get to that later on.

Swent: Did you get into Santiago very much for socializing?

Haldeman: No, I did no socializing at all in Santiago. I vacationed in the States with the family and went up to see my wife's mother, my mother, who was still alive at that time, and my wife's brothers and sister. I was a typical U.S. expatriate working abroad. The Chilean market didn't have much in clothing or bedsheets and so forth. So when we went up to the States for a three-months' vacation every three years--. I shortened the contracts to two years with two months' vacation to get the guys out more to the States, and they would come back loaded with things. We'd send a truck down, and all that stuff. We imported Arrow shirts.

Swent: I came down on the plane this week with some fellow who was carrying four lampshades by hand. [laughter] So it still goes on.

Haldeman: It still goes on. Goods imported from the U.S., people just love to have them and show them off in their houses. That's why I have no worry about this North American Free Trade Agreement [NAFTA]; we'll be money ahead. The more they can buy our goods, and they love them--and let them manufacture it down here, and they can buy it here with our label on it. The Japanese do it. Mr. [Ross] Perot doesn't quite agree with me.

Turton passed away, and Michaelson had to go to Santiago. Turton never did want to go. The New York board of directors wanted to have somebody for political representation. By this time we were having problems with our tax rates going up. The Chilean Congress was starting to levy more burden on the copper companies to finance the budget deficits rather than try to develop new business atmosphere. It was just the contrary; it discouraged new business to come in, because they were treating the existing businesses badly. That's the way it went.

Some Thoughts on Chilean Politics

Haldeman: We came up now to a little bit more political pressure of elections, and the left wing is drumming hard to take over copper. The political situation in Chile has been and still is divided in generally three groups. One is the extreme right, one is the center, and one is the extreme left. Each of the three groups has about one-third of the votes.

Swent: So two-thirds controls.

Haldeman: Yes. When Alessandri was elected, he was only elected on one-third, and he had to sue for peace to get a majority to give 51 percent in the Congress for votes. And Frei was elected with plus-50 percent of the vote, but he didn't have a majority in Congress; so he also had to sue for peace to govern. Ibanez was the same way, and González Videla was the same way. As I told you yesterday at lunch, we now have two-thirds, the left and the center, who were always fighting, both against the right third. They are now together, sharing the glory of what the military did to reestablish a free, open-market economy here. As long as they can stay together, we are not going to have a problem--if they can just keep the GNP [gross national product] at 6 percent a year. A man would have to have a gun at his forehead and pull the trigger to upset the apple cart and destroy the balance of this thing. It's working. The socialists, the left wing, the center left, and the Christian Democrats realize that this market economy is the best thing to increase the standard of living for the whole country. I hope they can get another generation coming through that, who will vote that way. Then I don't care what the parties are called, they're going to be voting for a good economy, and politics secondly.

Swent: Which, as you were saying, is quite a change for Latin America.

Haldeman: Absolutely. And they're very proud of it. They don't want anybody to come back and say, "Hey, you fell back, just like Peru or Bolivia." No, "I want to be the leader." The national pride here is going to keep that alive for quite awhile, I hope.

Swent: We might interject that it's hard to find a quiet place in this city, with all the construction going.

Haldeman: It's wonderful. It's jobs.

Swent: I've never seen so much construction in my life. It's all day and all night in every block.

Haldeman: Good.

Swent: Tremendous prosperity.

Haldeman: That means TV sets, a new stove for the wife, clothes for the kids, and so on, for our workers.

Swent: The people on the street are so well dressed.

Haldeman: It's awfully hard to get a strike nowadays. People don't strike any more; they make too much money. It's wonderful.

Swent: Well, the prosperity is something to see.

Haldeman: We owe that to the general.

Swent: General Pinochet?

Haldeman: Yes. He was convinced that a market economy had to be established here for the country to get ahead. He was smart enough, like many great leaders, to get good young people around him and let them go. They made a couple of mistakes, but they didn't repeat them, and he prevailed. He didn't have to go through Congress. He had his boys go out and canvassed the world to find out what we had to do to be competitive in mining, exports, quality control. Write the law, and he would sign it.

[Pinochet said] Labor--what do we need in labor? Take all the labor laws, which are all political laws and such a mess you couldn't understand them. Just put them all to one side. All of these laws were superseded by very simple legislation. You can strike, and if you don't get a settlement by sixty days, the employer has a right to hire new people and start all over again. The first time it happened, nobody believed it and went to see the minister, who said, "I'm sorry; it's the law." On the fifty-ninth day, they signed up.

The employers started abusing the thing a little bit, and the president said, "Now, come on. If you're going to abuse it, we're going to doctor it and give the workers a better break. What do you want?" He called in a pow-wow, a jawboning--the Central Workers' Confederation, the biggest union; the head of the national manufacturing society; and the head of the mining association, and private sector. They sat with the ministers of finance, economy, and labor, and said, "You have to teach your people properly. As the economy goes up, you--business--trickle down. If you don't, I'm going to legislate."

So the bosses started to open up the trickle valves. We haven't had a strike here in I don't remember when. Everything is booming. In fact, we have trouble because there is just too much purchasing power here. We can't get the inflation down to a single digit just because the economy is doing too well. Wouldn't you like to have that in the States? [laughs] But don't shoot holes in it down here.

Where were we?

V GENERAL MANAGER, CEO, VICE PRESIDENT, DIRECTOR OF BRADEN COPPER COMPANY, 1954-1967

Swent: Turton died, and Michaelson moved to Santiago.

Haldeman: As he moved to Santiago, I became general manager in 1954.

Swent: Did this mean that you moved down to Coya?

Haldeman: Yes, I moved to Coya, but I was there only seven months. I had furnished Mr. Turton's house, and it was beautiful. Now fate comes in again. In the United States, Cox and Milliken had hired a man to be manager of the Western Mine Divisions. I forget his name. They didn't realize that the man had a bottle problem. About the third time he got off the plane in Salt Lake City, Utah, and fell down the stairs, they decided that they had to let him go. So they called Mr. Michaelson and said, "Mike, you come up to the States and take over the job, and tell Mr. Haldeman that he has to move into Santiago. He will be the chief executive officer."

Here I was, thrown into politics.

Swent: This was in '54?

Haldeman: The end of '54 or the beginning of '55. I was thirty-seven years old, the youngest general manager in the company's history. Mr. Ibañez was president, and he was a very weak president. He was a general of the army and had a second term. The first term he had a military coup and took it over, but he was voted in again for president, because all the people remembered that bread only cost twenty centavos a loaf at that time, and he'd probably get the food prices down. Inflation was rampant.

Receiving the Orden al Mérito Bernardo O'Higgins

Haldeman: Anyway, the general got in, and the government floated along from '52 to '58. In the middle of that, in 1957 I became vice president of Braden Copper. It was another title and a raise in pay, and then I became a member of the Braden board in New York but still staying in Chile. I received a decoration, the *Orden Al Mérito Bernardo O'Higgins* from the Chilean government, with the rank of *oficial*. There was a ceremony with the minister of mines.

Swent: That must have been a big thrill.

Haldeman: Very big thrill. It raised my posture and stature in local society.

Tax Problems

Haldeman: Now we came to a problem with taxes. Our taxes were way, way up. In fact, our direct and indirect taxes were 82 percent. The exchange rate was an indirect tax, and so on.

Swent: Did they tax your ore?

Haldeman: No, they just taxed all of the business part of the thing--transfer taxes, exchange rates, import duty rates, corporate tax rates. Nothing to do with the ore in the ground.

Swent: No severance tax?

Haldeman: No. Of course, the companies were really groaning. The government needed some help from the United States, which used to give money to cover up the deficit problems. So in '55 they legislated a new law, Number 11,828, in which they reduced the tax rates for increasing production with certain investments, which was a very modest and nominal thing, but it got Chile off the hook. They had also accumulated an awful lot of copper there when they decided they were going to sell it through the Chilean Central Bank and give us the proceeds. They weren't able to sell it, as nobody would buy it. There was a blockade on the thing.

Swent: Through the Chilean Central Bank?

Haldeman: Yes. So Uncle Sam bailed them out on the basis, "I'll pick up the copper as long as you make a better shake for the copper companies." They did, and that law came out. That also created what the Chileans had always wanted to have, what they called a *Departamento de Cobre*, which was a fiscalizing agency, an overseeing agency that would centralize all of its activities on the copper companies--exports, imports, profits, and all the rest of the stuff. It was a watchdog kind of thing. That satisfied an awful lot of political anger, because nobody was quite sure whether we had a lot of gold that we were sneaking out in bars of copper that we were shipping and not declaring. Everybody was suspicious of everybody, so they just put up a government agency. This was a watchdog, and you reported on everything. We had to report to them. Finally it took the heat off of us, which was very good.

Swent: What were your relationships with the American embassy?

Haldeman: Very good.

Swent: Did you work with Chile through the American government?

Haldeman: Oh, no. I worked directly with the Chilean government. At that time, really the major export industries were owned by American interests. There were the nitrate and the copper companies, Bethlehem Steel, and iron ore. There was a big American colony at that time. I was the second-most important man in the mining industry and in foreign investments in Chile. Anaconda was number one because of their size, and we were number two. I was seated accordingly in protocol.

Swent: So when they wanted to put the squeeze on someone, they went directly to you and Anaconda?

Haldeman: They would do it through Congress. Then the government would have to enforce it.

Building Relationships with the Chilean Government

Swent: How did you get these messages from them?

Haldeman: When I got into Santiago and the general manager's job, I realized that I was still a foreigner, and I had to have a Chilean with some political know-how who would give me political advice and get me the contacts and open me the doors.

Swent: Had Michaelson handed over anything to you?

Haldeman: He was only there seven months. He just sprang in there and went out and left me. There was nobody prepared for that.

Mario Illanes

Swent: You had to do all your allying yourself?

Haldeman: There was a man working in the office, a Chilean named Mario Illanes, who had been in the diplomatic service in the Chilean consulate in San Francisco and in Washington for several years. Turton had hired him to stay in Santiago and handle the politicians and so on, because Turton wouldn't work in Santiago; he wanted to live out in Coya in his nice house with a garden. So I got Mario Illanes, and I said, "Mario, I have to get to know the senators, representatives, ministers, the president, and all the businessmen in the National Manufacturing Society. I've got to get myself into the Chilean business and political whirl."

Swent: Was there a Chilean Mining Society?

Haldeman: Yes, but it was only mining engineers, and most of them were small miners.

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Swent: Your job was to get to know the Chileans, and about eight months of the year you were in Santiago?

Haldeman: For about eight months of the year everybody was in Santiago. The other four months--December, January, February, and March--people started vacations, and Congress and the courts shut down. I said, "Every month, I'd like to have a lunch at the office." That was in the apartment they had built on the top floor of a five-story building in Santiago for Turton to live in.

Monthly Luncheons at Agustinas 1389

Swent: What was the address?

Haldeman: Agustinas 1389. It still has on the top part of the concrete, that not even Allende took away, that is in intaglio, indented Roman letters, "Braden Copper Company."

I had the apartment turned into a nice big dining room, an office suite, another executive office, and a secretary's office. We had it all redone. We started the invitations for about sixteen people, 1:15 or 1:30 for cocktails in my office room, and the best catering service we could get. Then we'd go in and have lunch. We had oysters, lobsters, the best wine. At that time you were able to get good cigars. Of course the Chilean politician likes to live well, and I invited all the political parties. I even invited Mr. Allende, but he never accepted. When Alessandri was president, he accepted. González Videla accepted, and, in fact, he invited me.

I started to know the political leaders of the country--all political, economic, social, banking, et cetera--and I mixed them up. Mario Illanes was a wonderful diplomat; he knew how to handle them. Of course, the first lunches were just as dry as could be. They were waiting for me to ask for what I wanted, and nothing happened. I just asked a couple of questions, "What do you think about this?" and so on. Word got around that these were just social lunches, and they had good food, the best liquors you could imagine, nice cigars, there were a lot of enjoyable people, and Haldeman didn't want anything; he just wanted to know.

It got to be that Mario had a waiting list to be invited. The guys would stay around until 5:30 and 6:00 and booze. The radicals were the biggest bon vivants of the lunches. I got to know people who to this day are still my friends. That's why I was able to open doors. I could even call up ministers and so on.

Byron E. Grant; Modernizing the Management

Haldeman: I had come to Santiago in 1955 as head of the company. About that time I needed a second man, and I started to interview people who were recommended through Kennecott, other executives who had Latin American experience and Spanish or something. After a couple of attempts at hiring people and not being satisfied, which took about a year or a year and a half, I came across Mr. Byron E. Grant. He was the man whose last experience at that time had been in United States Smelting and Refining in Utah. He came down for an interview, and we talked together.

About this time I became very aware of the need for incepting modern management methods in the company. We had been quite archaic, and the world was slipping us by, being so far away from the modern world. Harvard had started up, and industrial engineering became the fad, and new organization with all of the frills. And Mr. Milliken was quite a bug on management.

I talked it over with Grant, as I was very enthused about the idea of becoming a bit more modern and bringing ourselves up to date. Mr. Grant accepted the job. Of course, I was in Santiago, and he, being in Coya, had the day-to-day business with the seven or eight thousand people involved. I was in the political arena with the government authorities and the likes, trying to get our image corrected in the country. Maybe two times a month we'd get together and plan out what we wanted to do.

We decided at that time to incept all of the new tools that were out on the market--wage and salary administration, job evaluation, reorganization, warehouse controls, training programs. We started to plan on how we would send our supervisors, superintendents, and second-in-lines abroad to get some training and mix with the rest of the world that was spinning around above us. We were too far away.

Using More Chilean Engineers

Swent: Were you hiring more Chilean management?

Haldeman: No. At this time we talked over this as an issue, in 1955 and 1956. I had some fifteen years in Chile, and I became very convinced that the Chilean engineer, the professional, who was always held to the third-rate level with the foreigners holding the first- and second-level jobs, was just as capable, didn't require a three-year contract, didn't have to have a wife who had to go home every two or three years, didn't have to have his children in special Calvert course schools, and was satisfied to work a lifetime with the company.

Swent: And already knew Spanish.

Haldeman: Yes. So we decided that we would start to train the Chileans. I was having a lot of problems with the foreign service people. They were demanding more and overseas premiums, 20 percent over salary, just to go abroad.

Swent: Were they able to get good engineering training in Chile at that time?

Haldeman: Well, yes. Their schools were turning out good people. At that time the steel industry, *Compañía Acero Pacífico*, CAP, was plowing right ahead. It was a very top-class, iron ore mining and steel company with Chilean engineers. The Chilean power company, Endesa, had excellent people in engineering, operation, and planning. The Chilean oil company, ENAP, had excellent engineers. Mr. Simián, ex-minister of mines (who was the best man at my second marriage), was the man who was on the first well that found oil in the south of Chile. He was a mining engineer in petroleum.

So there were excellent people. Of course, these were in Chilean companies, and in the American companies the Americans had the top jobs because they didn't trust the Chileans, if you want to put it that way. They didn't trust them with purchasing, because they always thought they were crooked. Even today it exists to a certain degree. Canadians come down here, and they don't trust the Chileans to have the purchasing jobs or in the accounting and controlling departments; they have to have their own men. I don't mind having two men, one to make major decisions and one to make sure he has the key to the cash register. But as for the rest of them, Chile has plenty of capable engineers.

So we incepted that, and started to work on it in about 1956 and 1957. As we go along here, I'll start to phase in the results of it.

Presidential Elections, 1958, Alessandri the Winner

Haldeman: In 1958 we had presidential elections. At that time there was a great threat of Mr. Allende becoming elected. The other candidate was Mr. Alessandri. Of course, one of Allende's major platforms was the expropriation of copper. It was painted on the walls all over the country. We were called every imaginable thing you can think of, having stolen I don't know what from the country, et cetera. Chile was still divided politically into thirds, and the Christian Democrat Party now started to bubble forth as a major faction in the center.

Mr. Alessandri was the new president. At this point it seemed like new presidents were given the country with the coffers empty; they were broke. They looked for the greatest source of income--the copper companies, the major export. Sixty, seventy, eighty percent of their foreign exchange came in copper--two companies.

Swent: Anaconda and Kennecott?

Haldeman: Right. Of course, the president would call on you and ask you what you were going to do to for the country: if you can, increase production. We had been working it out in the engineering department since '55 or '56. I put it on a six-year presidential period, with a little bit for each president to satisfy him and increase the revenues. By the end of that term, they had already spent that, and you had to have something for the next president in the basket. We put it on the gantt chart and just programmed them--something for each president. A gantt chart is a planning chart, where you put down critical path methods; it's an engineering tool.

Mr. Milliken came down in the '56, '57, '58 period, and he said, "You know, we have a tremendous ore body here, but we're not really working it to its potential. It could generate much more." We were around 160,000 or 170,000 tons a year of copper. He said, "Why don't you put something on the board and see what you can devise. Let your imagination run away with you, even to dumping waste into the Pacific, 150 kilometers away, and see what alternates there are."

Swent: Why would that help?

Haldeman: If you expanded so big, there was no place to dump in the central valley, so you had to get out. Anaconda was dumping tailings in the ocean up north anyway. You have to get rid of them, and you can't put them on farm land.

That was a think-tank arrangement.

Swent: Brainstorming.

Haldeman: Yes, just to see what we could do. We had a lot of things on the board. Kennecott's board of directors said, "Maybe it's the time we just take the step forward and make a bold move and present a very bold program to the government. Get our tax rate down and increase production, let the government have more revenues to keep them happy, and get some more profits out of the property." We worked out the figures.

The Guggenheim Philosophy of Increasing Capital Value

Haldeman: Since the Guggenheims took it over, they didn't take a dividend out for the first twenty-six years. They plowed everything back to build up the property. If you take that period of time from the beginning until about '55 or '56--I had somebody make a study for me--the return on the amount of money invested in dollars (not in present value) was something like 6 percent a year average. The Guggenheims were people like that, who would plow back and build a business. They weren't interested too much in the profit; they were interested in increasing the capital value. It's a different philosophy. Today you have the present value of money, and you want to get your cash out, get it back in, and roll it over again. Who's right and who's wrong, I have no comments on.

Swent: Just different.

Haldeman: It's entirely different.

The Codegua Plan to Modernize the Mine

Haldeman: We devised what is called the Codegua plan. Codegua is a little town just a few miles north of Rancagua, the rail terminal. Why was it there? That was a natural valley. It went up and almost connected with the valley where El Teniente mine was. If you're looking north-south, Codegua was just about west of the mine--of this little canyon that went up there--but never connected over. To get to our mine, you went from Rancagua, went south, looped up El Teniente canyon, and back north to the mine.

We were mining from Sewell, going in from level Teniente 5 and going up. It's an upside mine. All the ore that we mined up above, we dropped in the ore passes, which was a primary crushing operation in itself. It went out to the concentrator here, and the concentrates were shipped by an aerial tramway to Caletones, about twenty kilometers down.

We knew that by mining here by this method and bringing the ore out to this town, where we had paternalism, high costs, and people with social problems, the unions had everybody captive there. Socialists and communists dominated this union. People couldn't run away; they couldn't go out and spend a weekend at the beach, like they can living in Rancagua. They're held captive. If they want to have an assembly, they would knock on doors, get everybody out, and vote for a strike. It was a wonderful method.

We figured that maybe by the year 1980 we would be pressed to feed this concentrator. We would be mining just about this level, and there was a tremendous reserve of a billion or two billion tons of ore below this. Sooner or later, sometime in the future, somebody has to go down to a lower level. You can go down in another level, from 7,000 to 5,000 feet, but if you went to Codegua you went to 2,000 feet, and there you had mining beyond the year 2100 if you wanted.

So we engineered a scheme wherein we went from the valley floor and ran a thirty-kilometer tunnel. We would go right underneath and hook it up and bring the ore out to almost the valley floor, with a concentrator there. Our smelter was an antiquated thing; it's still working today, but it was a shambles. We would put in a modern smelter that would capture the gas, acid, and so on, at about the 3,000-foot elevation, very close to the mill. We would walk away from all the town sites, all paternalism. From that town of Codegua to Rancagua, which was a large open city, we would build government-financed housing. We would put up the money, the workers would assume a long-term mortgage, and then they would pay the government. The thing was a very nice way to get out of your housing problems up there.

It would take you about thirteen minutes to travel by bus from the city to the tunnel at Codegua, another thirty minutes into the mine, five minutes up the shaft. In fifty minutes, you're at your working face. As it was then, it took you four hours just to get from the city down, and from the working face, five-and-a-half or six hours. Because of the concentration of people of up there and the limited ability to move passengers on that narrow-gauge railroad, we calculated that every family had an opportunity only once a month to leave the camp. We just didn't have any more transportation facilities. When there was a snow slide, we were locked in for three or four days until we dug it out.

We presented that plan to Mr. Alessandri in 1959. One of the conditions we required was that we had some guarantee, say for a twenty-year period--they call them an ad referendum contract, in which you sit with the government and say, "I want nondiscriminatory treatment on exchange rate, pay the same taxes as the Chilean companies." In other words, don't discriminate against me; let me get into the community here and pay the same as everybody else pays, guaranteed for twenty years. If taxes go up for everybody, I'll go up; if they go down, I go down.

Swent: At this point were you paying discriminatory rates?

Haldeman: Yes. We were at 65 or 70 percent, and of course they can diddle you all the ways they want--exchange and everything.

You negotiate that and get an agreement with the president, and then the president sends it to the Congress and says, "Take it or leave it. Don't negotiate and start to change commas and this and that," which they will do a little bit, but it's a package deal.

We went over and talked to the president and told him what we had in mind.

Presenting the Plan to President Alessandri

Swent: Did you talk directly with the president?

Haldeman: Oh, yes. Mr. Milliken, Michaelson, and myself. Milliken didn't speak any Spanish, and Michaelson said, "You talk to him, Bob."

Swent: You weren't speaking with his representatives? You were speaking directly with the president?

Haldeman: We went directly to him, and he congratulated us on our bold plan. He was an engineer himself, and he realized it was a bold plan. At the time, 1956, we estimated the cost at $200 million. If you take inflation and put it in present value, as the economists do, that's about a $1.2 billion investment.

The president appointed the minister of finance, Mr. Figueroa, to strike a deal with us. Well, '57 passed, '58 passed, '59 passed. We just couldn't seem to come to an agreement. What really was behind it was that Mr. Alessandri didn't feel he wanted to take that package to the Congress.

I refer you to a book, [Frederick B.] Pike's *Chile and U.S. Relations, 1880-1962*, Notre Dame, 1963. This tells you why the Chilean leading class doesn't like the United States, by names. It's very understandable. Don't forget that Chile at that time was an agricultural country. All of the gentry had big farms, were absentee landlords, and paid miserable wages to the people. They left the mining to the foreigners, the gringos. Of course, anything that upset their apple cart, they had to tax the gringos. Remember President Kennedy's Alliance for Progress, which ended in Frei's expropriation of large farms.

Alessandri just didn't feel he wanted to take our package to Congress, so in about 1962 we threw in the sponge and figured there was no need to talk any more about it.

Swent: You must have been terribly disappointed.

Haldeman: Yes, very disappointed. When I had to leave the country, I had to leave so quickly that I didn't have time to go into the files. I don't know where that report was. I know somebody in the Copper Corporation has it in the government, but I can't get my hands on it.

In 1962 the government was scrounging for money. They had problems with the copper price fluctuations--everything. Of course, no new investments. I became aware of the fact that now Mr. Allende is gaining more ground politically on the fact that they should take over copper. Well, we hadn't done anything for the government, but it wasn't because we didn't want to; we just couldn't. The political pressures were coming, and I could see the handwriting on the wall. I talked to Mr. Michaelson. I said, "Mike, time is limited. Like Gypsy Rose Lee, you have to find a gimmick to stay alive."

Mr. Pedro Ibáñez Ojeda an Advisor

Haldeman: At this time Mr. Ibáñez, who was a businessman, one of the chaps I invited to lunch from time to time--the coffee you had today is Nescafé; he started the Nescafé business in Chile. A landowner, a very charming person. He founded these Almac stores, a chain that you see everywhere. Today the poor fellow is a vegetable in bed on his farm. He must be eighty-plus. He called me over to his office one day and said, "Bob, I want to give you a little personal advice. Time is running out. As you know, you are a foreign company, and the political pressures are on. You people in copper are just too important to the nation's economy. When the price of copper goes down and there's too much inventory on the market, New York--both your companies--decide they're going to have to cut back production," which they did at one time when I was in the mine. I was the general superintendent in '52, and Mr. Stannard came down. Our prices were at rock-bottom; we were getting along with practically no profit at all. He said he couldn't see much future for the world business of copper, and they were on the borderline of deciding to shut down the mine, the whole property. That was at a tuxedo dinner at the Teniente Club.

"When the prices go down, you people curtail production, fire 30 or 40 percent of your people, and at the end of the year hire them back again. How can we Chileans plan a budget for our country when you make the decisions without advising us?" It's true, and they had no other sources of income of exports. Nitrate was a sad business; it was just barely alive. He said, "You've got to incorporate yourself more in the Chilean scene of business here. Why don't you think of becoming a Chilean company. You don't have to lose your control of the company, but offer shares in the local market. Get some shareholders, get Chileans involved with you so that they can defend your position. When your dividends go down or the government wants to tax you, I don't protest. But if I had a block of shares in the company, I'd certainly make a fuss. And have your board here, a local board, where decisions are made, and you have Chilean representatives on the board who have shares on the board. They don't have to have control. They're going to get the message over to the government that this is a business, and you just can't treat it any other way. It has to hurt our pockets a little bit before you get some help and defense."

I thought it over, and he made an awful lot of sense. I went back to my office with my two lawyers and sat down and told them what I thought. They didn't disagree. They were aware of it, but nobody wanted to really bring it out.

Swent: Were these Chilean lawyers?

Haldeman: Yes. But to think, at that time, of a Chilean lawyer to tell a 100-percent owned American company that they should incorporate and sell shares on the market--never-never land; they wouldn't dream of that.

Swent: It doesn't sound strange now, does it?

Haldeman: Well, the world has changed.

I said to the lawyers, "Let's get to work. I want you to educate me on all the legislation in regards to corporations," which I never had to bother about because we were a wholly-owned subsidiary in the U.S. We worked three, four, five months I guess it was. I put together a whole presentation, a whole package of what I proposed to do--to have a Chilean board, et cetera.

I made enough dress rehearsals that I was absolutely sure I could present this myself, and I became very convinced of the thing. We would get this nationalistic feeling off our backs. And if you want to share the profits, share them. Sometimes it's better to be a pig, not a hog. A pig just eats a little bit, but the hog eats it all.

I talked to Michaelson, and I told him what I had in mind. He said it sounded good, but what I had to do was convince Mr. Milliken on the thing. He said, "Look, if you want to come up, I'll arrange for a meeting. You come up and sell your plan to him."

Presenting a Plan for Chileanization to Frank Milliken, President of Kennecott

Haldeman: So he arranged a meeting, and I went up to New York and sat down with Mr. Milliken--just the two of us. "Frank, I want to tell you something, what I believe and what I think," and I started. It took an hour and a half or two hours and a couple of cups of coffee.

He sat there with his lower chin out; he pouts all the time. When I finished, he looked at me and said, "Bob, you have a problem." What's that? "The trouble with you, Bob, is that you have been working in Chile too long. Do you realize that if I took this to the board of directors they would fire me?"

"No, Mr. Milliken."

"Well, thanks a lot. When are you going back? Why don't you come over for dinner tonight."

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Haldeman: So I came back to Santiago with my tail between my legs.

Swent: He didn't offer to sponsor it at all?

Haldeman: No. That was the end of the conversation. I came back, put it in the file, and that was the end of it.

Meanwhile, we had better get back to the management side. We left Mr. Grant in 1956, and now it was 1962, 1963.

Swent: Grant was still there?

Haldeman: Grant was still here as the second man. When we started this thing out of a payroll of about 7,000 people, about 400 were expatriates, mostly Americans. By this time we were down to about 180 Americans, the other jobs being replaced with Chileans.

The Payroll System and the "Gold Roll"

Haldeman: I have to tell you about the payroll. The payroll was divided into three sections. The top jobs were called "gold roll", the second jobs were "*empleados* [employees] on pesos," and the third jobs were "*obreros*, or workers, on pesos". The Chileans could get up to the "*empleados* on peso" roll, but the gold roll, of the 400 maybe there were only four or five Chileans.

Why do they call it gold roll? Because when they first started the operations in 1915, Braden Copper Company smelted down to matte and sometimes to blister, and the only source of people who really knew the smelting and some concentrating, which were air cells, were in England. They wouldn't come out for Chilean pesos, but they came out for *peniques*, or gold coins. That's how you get a converter foreman or a smelter foreman or a flotation foreman, usually Welsh or English or Cockney--you pay them in gold coins. That became the "gold roll".

Later they stopped paying gold and paid them in United States dollars. And, of course, for years we had a black market, where the official rate was 30, and you could go out and get 150. If this fellow earned 50, and that one earned 100, and this is 150, actually he was earning 400 or 500 if you went on the curb market--the black market.

Swent: Did they ever pay in dollars in the States? Did they ever deposit your pay in the States for you?

Haldeman: Oh, yes, they deposited it in the States, and then you'd cash a check or you could charge. For years, until 1955, I lived on chits and never used any American currency.

As we replaced these jobs in the gold roll (they've cut out the gold roll, because it's nationalized, and they couldn't do that; that was an Ugly American habit), they earned dollars, and we paid them the same salary at the job they replaced. Of course, the Chileans who got up into that position just became rich; they could buy a car and this and that. Work? Oh, my gosh. Eight hours? That wasn't the shift; the wives would call them up and tell them to come home. And you built loyalty with a lot of pay and the fact that they were recognized as equals.

In some of the areas, like the smelter, you had a bunch of bohunks who were running the converters and the reverberatory furnaces and the roaster building. The first time I put a Chilean in the converter section, the whole converter group--Americans and Canadians (and these were not university graduates; they were practical men) got word to the superintendent: "You tell Haldeman, that new man in the management, that we're going to quit if they put the Chilean in the same job as we are."

I told the superintendent to ask them when they wanted their plane tickets to go home; I'd have them delivered to them. Two of them picked it up, and I filled the jobs immediately. Everybody became quiet; they suddenly realized that I wasn't fooling around. They had a Chilean engineer, a college graduate, in there running the shift. He ran it much better than the bohunks--the practical men.

That started the thing going in management. About this time we had a tremendous breakthrough, and the remaining expatriates realized that they had to compete with the Chileans. It made a very healthy atmosphere [for the Chileans] to get up the management ladder, because they had really worked their tails off. The Americans figured they were down for three years, and they could do almost what they wanted. No way.

So it was very helpful. Then it became the place to go for the Chilean engineer, and we then had requests of the best people around to get on the dollar payroll. We started to hand-pick the people out of the industry [laughs], and we picked up an excellent team. I'll get to that later on.

Swent: This you could do on your own authority? The board in New York didn't know what was going on?

Haldeman: I didn't consult them; I told them.

There was myself and Mr. Grant, and then we had a manager of operations, manager of service departments, and manager of personnel. We had the equivalent job in purchasing and accounting. Accounting was always held with an American under Kennecott's American accounting system; they have the hands on the cash box. I don't have any problem with that; that's perfectly right. But the fellow they had down there went along with us and hired Chileans under him.

About '63 or '64, we had an opening for a manager in the service departments. I didn't have anybody I could put in that I would be satisfied with who could compete with a Chilean fellow, Nelson Pereira. He had been educated at the University of Illinois in the United States and at one time was 110-, 220-, and 440-meter AAU track champion. A Chilean!

So we made him the first Chilean *gerente*. Well, that was earth-shaking. [laughs] Then he turned around and married the daughter of my Mr. Casarotto, and they had four children. Their daughter is the girl who married a son of my friend who worked in the Bethlehem Steel mines. Small world, eh?

Presidential Elections, 1964; Frei vs. Allende

Haldeman: Now we're drifting to '63 and '64. The political scene became very intense. Mr. Frei was one of the candidates, and Allende was another. There was another candidate, but he didn't have any votes--a Perot, you might say, as far as attracting votes. Frei's Christian Democrat Party had built up quite a bit of reputation at this time, and they were real good politicians out in the boondocks. They went right to the little towns and established offices, and they had a lot of hard workers. That's how they consolidated their vote basis.

Mr. Frei started to talk about Chileanization of copper, with a lot of political gobbledy-gook that I didn't quite understand. The copper companies were asking, "What is this fellow after?" He'd make some statements, but they were semi-vague and broad. They wanted to have a voice and a vote in their destiny in copper. Well, if you're worried, that means taking it away from you, whatever it is.

Just before elections, in July or August of '64, I arranged for a meeting through my Mr. Illanes. I said, "I want to talk to Mr. Frei and understand exactly what he means about this thing." So we went to see Mr. Claro, one of the directors up there [in a photo], the guy sitting down on the left, the bald fellow. He was married to one of [President] Gonzalez Videla's daughters. He was in the [political] party of Frei.

Swent: What was his name?

Haldeman: José Claro. José said, "I'll arrange to have Mr. Frei over at my house for a drink."

Swent: The picture is interesting, because it's directors of--

Haldeman: That's the first board meeting of the company when we sold 51 percent. I'll get to that later on.

So I had a drink at his house and Mr. Frei was there. I asked him exactly what it was he wanted. He had had lunch before at my office, and I knew him very well. He was a senator, and one of the invited men, so I knew him by first name. That's how those things pay off. He said, "Bob, let me explain it to you. We have to have something to say in the industry," and he more or less repeated what Ibáñez (my advisor) had told me, who was not a Christian Democrat; he was extreme Right. But it was the general feeling.

Frei said, "I call it Chileanization, but what it is really--there are two things that I would like and am going to ask the companies for. One is that you kick up production, one way or the other; I need more revenues. The second thing is that I want to buy some equity. I don't want to be given anything; I want to buy in the company, be on your board, and be able to give our opinions on what is happening to the industry. Because, after all, 70 or 80 percent of all of our foreign exchange comes from these companies."

Cerro de Pasco Company; Andina Mine and Robert Koenig

Haldeman: By this time there were three companies. Cerro de Pasco in Peru, in 1958 and 1959, decided they were going to open up the mine called Andina in Los Andes. It's about 80 kilometers north of here. The ore body was known for years, and they got the property claimed and bought it out. The mill is underground; it's way up, at about 3,500 meters but in an area that is very precipitous terrain, a lot of snow and snow slides and everything. Well, they decided they would go underground, and they built the mill underground. The mine is block caving like El Teniente; it all goes to the surface. It has been quite successful.

Bob Koenig, the president of Cerro de Pasco, was just coming on stream with his property at that time. He was the only thing that Mr. Frei could show of a new investment. He said, "There were two companies, and now there are three--Kennecott, Anaconda, and now the Cerro de Pasco Andina mine. I'm going to talk to all of you, and if I am elected--which I know I will be--" as they all say. He said, "I hope you can understand me and help me out. I don't want something for nothing."

That was fine. I understood it very clearly. What he was saying was that in the long haul, in each presidential term some guy is going to want more and finally get control of the company and buy it out. That was perfectly all right, because if Allende got in, we would be taken over immediately. This might be Gypsy Rose Lee's gimmick to keep you alive a little bit longer.

I reported this to New York, and I also said that we had some alternate schemes of expansion. The Codegua plan, that enormous thing, would now have cost about $700 million. We took a plan wherein we went in an intermediate level, at the smelter level--5,000 feet--and made a tunnel in there. From there down we made a highway and got rid of the railroad. We abandoned the camps of the smelter and Sewell and opened up from the smelter down to the public; it was wide open. And of course we opened up another thirty or forty years of ore.

The next step, whoever has it some years from now, will go down to where we were at Codegua and do something, because it's too costly to raise all that rock up and get it out to the concentrator.

So it was a half a Codegua, if you want to put it that way, which came out to about $240 million in cost. We had that plus other things on the fire. But New York said, "No, we don't want to go to the Codegua. To put in a billion dollars now--we just can't see the country that stable for that long a time to get our money out." We were turned down once, so if they want it, they can come back and ask for it.

We come to the elections, and Mr. Frei was elected by a majority--over 50 percent of the popular vote--and he was put into office.

Swent: He still didn't control Congress, though, did he?

Haldeman: No, he didn't control Congress. But in the way of things he had enough splinter groups there that he was able to get major legislation through without modifying it too much.

Now the government had a problem: how were they going to tackle the copper companies--in what manner and with whom? So the president elected two people: Raúl Sáez, a brilliant engineer who just passed away last year, who had worked his way up. The highest job he had before he moved up was as the head of Endesa, the power company. He was an excellent engineer, capable, and a big thinker with a lot of international experience.

If you remember, in 1955 they legislated and made this auditing group, the *Departamento de Cobre*. It was a watchdog on the copper companies. The man who was the vice president of that group was Javier Lagarrigue, the second man elected by Frei. He was a Christian Democrat and a nice fellow. I had known him for years, and he knew the copper business pretty well. I think he had been in that department since 1955, and we are now up to 1964.

Frei said to the two of them, "I want you to tackle the companies and see what you can do."

Well, they sat down and figured out, "We've got to go first where we can get the most out of the softest and the easiest." They decided the order would be from the easiest to the hardest, and the easiest was Bob Koenig. Bob had Cerro de Pasco in Peru; he had Latin experience, and he couldn't care less. He knew that you had to go along with the political current and tides.

We know the last is going to be Kennecott, because "they are Peck's Bad Boy; they're the hard nuts, and we're quite sure we're going to get nothing out of them. So we'll take number two, Anaconda, because they have all their eggs in the Chilean basket." They had no other income outside of Chile, an inside board of directors, re-elected their own president and their own directors every year, and gave themselves all a raise every year. They were sitting in this little copper-tinsel world with no other source of income.

They called in Mr. Koenig, and the conversations started. After a couple or three weeks they struck a deal where they, the Chileans, would buy in 25 percent of the company. It was based on asset and liability--the value of the company, everything above board payments. Bob Koenig was very pleased with it and satisfied.

Anaconda Company: Chuquicamata Mine, Charles Brinckerhoff

Haldeman: Now they called on number two, Anaconda. Well, Anaconda just couldn't pay dividends if they didn't have 100 percent of the cash flow from Chuquicamata and El Salvador.[1]

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[1] For more on this subject, see Vincent D. Perry, A Half Century as Mining and Exploration Geologist with the Anaconda Company, Regional Oral History Office, University of California, Berkeley, 1991.

Swent: Who was here with Anaconda at that time?

Haldeman: Charles Brinckerhoff, who had been here for years as the head of Anaconda, had just moved up to be president--not chairman of the board--of Anaconda in New York. Another fellow, Richard Sims, a controller, came down. He had been put in to operate it until they got somebody else--the Chuqui mines and so on. Actually, Brinckerhoff didn't really relinquish too much control over the operations of the property.

The Chileans started to talk to them. Anaconda couldn't afford to give 25 or any percent of those two mines, but they had this ore body which was called Exótica, about ten kilometers away from Chuqui. Chuqui was leached over the years, and part of the solutions trickled, ran under the gravel blankets, deposited out in the basin, and formed this secondary enrichment body, Exótica. They had grades of 2, 3, or 4 percent copper, but they were all exotic minerals--all acid solubles, no sulfides, nothing primary. They had stumbled across the darned thing when they were digging a shaft in a drift to drain the tailings deposits, and they found this ore.

They started to work on the metallurgy of the thing, and, bing, came Mr. Frei. So they said, "Well, we have a new ore body here; we'll open it up. It's high grade, and you'll have 25 percent in that. And we will pledge to increase the production at Chuquicamata by X percent, El Salvador by Y percent, and we will help build new port facilities at Tocopilla. We'll open an exploration program down in the southern part of Chile to satisfy a couple of senators down there." All of these things were window dressing and icing on the cake, and Chuqui and El Salvador were still 100 percent in Anaconda's hands, and the tax rates on the companies who went along were reduced to be 50 percent maximum tax.

After a lot of fuss, the government accepted that. So we were called. Of course, Frei had pretty well been convinced by this time that he didn't want to force this on us and become an enemy of the United States for investments, and in the world of copper, too. He probably figured he would try and get the best he could, and the next round, when his party was elected six years later, he could take another whack at the companies.

Our Mr. Milliken and Mr. Michaelson came down. I was called by Mr. Sáez, who said, "Bob, we'd like to have a meeting with your men next week," so I set it up. He said, "I don't want to have it downtown; the reporters are all over the place."

I said, "I'll take care of it. Don't worry." So we went way out to Las Condes and rented a house. We brought the cooks from our director's house in Sewell, two girls who had worked up there for forty years and could cook the most wonderful meals. Nobody knew. We had a telephone put in, and nobody knew the number. So we were to meet.

My bosses came down, and I met them at the airport and got them to the hotel on the morning before the day of the meeting. We had lunch, and they hemmed and hawed. Then everybody took a little rest, and in the afternoon Frank called me in. He said, "I want to let you know what we're going to do tomorrow. We've come to the conclusion that 25 percent is just the same as having 1 percent, and 49 percent for them is the same as having 1 percent; they'll always be a minority. At 50-50 you can't run a company. So we're going to sell them 51 percent. And this project of yours, going to a tunnel out there"--I called this the 280 Project; it was 280,000 tons of copper a year, and we were producing 180,000 tons.

He said, "That idea, 280,000 tons per year, are you sure it's going to work?"

I said, "Yes, it's going to work."

Swent: This was the half-Codegua plan?

Haldeman: Yes. He said, "We're going to propose that."

They had done their homework and had never told me a single thing about what they were doing. I said, "That's fine, Mr. Milliken. Go right ahead." Here was this guy who told me that if he took it to the board they would fire him, and now he was telling me we were going to do it but in a spectacular way. Fine.

We got to the meeting the next day at ten o'clock. We sat down and had a coke and a cup of coffee and so on. Raul Sáez was master of ceremonies. He knew Milliken and Michaelson from before, as did Lagarrigue, so we were all on first names. Sáez made a little pitch about what had happened before with Andina and Anaconda and what the president wanted, that he was not asking for something for nothing, blah, blah, blah.

Javier went on about, "If you incorporate yourself, hopefully we could get some sales to be made by the companies in Chile, and they become Chilean companies. And we have your best interests at heart," and all this stuff and so on.

A Bold Proposal for Chileanization

Haldeman: Frank said to Mr. Sáez, "Raúl, we've been thinking it over and we come with the following in mind. Twenty-five percent to us is just the same as 1 percent; in the same analogy, 49 percent is a minority and is just the same as 1 percent or 25 percent. We just don't think that solves any problems for you, much less for us, because that will always be a bone of contention. And 50-50--we don't want to have an arbitration court to manage the company. So we would think that the best thing for you, for the country, and for us is that you buy 51 percent of the company."

Sáez never flicked an eyebrow, and Javier Lagarrigue fumbled for his cigarettes and couldn't get one lit. Michaelson was smoking and gave him his Zippo lighter. Raúl said, "Fine. How much do you put the value at on the property?"

Milliken said, "We had American Appraisal assess this and it was assessed at $200 million; so 51 percent would cost $101 million. Call it $100 million. We have the appraisal, and it does not include the value of the ore." Okay; fine. Yes.

Frank said, "Furthermore on that, Bob has engineered a program. Bob, you explain it," and I explained what it involved--this tunnel and so on--in very few words. I didn't have any maps or anything like that. I said it would increase production by 60 percent.

Raúl said, "That's wonderful. How about the corporate structure?"

Frank said, "I don't think we should have a big, numerous board. We should have--not an executive committee but, say, seven or nine on the board, of which you would have the majority."

Raúl said, "I think nine is too much; seven is better. When you get nine, you get a lot of political hacks who want to get in. Four will be enough for us, because we can fill them with people who are capable and know the business."

Okay, so we would have three, and maybe we would have one alternate each. "Yes, that would be fine."

Sáez said, "Frank, who's going to manage the company?"

"The board, and you have the majority."

Sáez said, "Frank, let me congratulate you. This is absolutely breathtaking. We never thought of this. It's brilliant. Two things come to my mind. Because of the bold move you have taken, I think you should have a tax rate lower than the others. And $100 million is just like a $100 suit; a $99 suit is much cheaper. I'll lower the tax rate so that we'll put the price of this down to $80 million, and you'll pick it up in the first two years of operation in your profits with the lower tax. Is that all right?"

Frank said, "Fine."

Raúl said, "We're not set up to operate the property. Would you have a problem if we let Bob run it?"

Frank said, "What do you want?"

Raúl said, "I'll tell you what. I have full confidence in Bob. Why don't you let Bob and me work out a management contract?"

Frank said, "Anything you guys work out is fine by me. It's approved ahead of time."

Lagarrigue was staying in the background, and Frank said, "Javier, do you have something to say?"

Javier asked, "Who's going to sell the copper?" This was a great thing--who sold the copper. That politically was the thing.

Frank said, "The board of directors is going to call the shots, and you have the majority."

Javier asked, "You'll be responsible for sales?"

Frank said, "The board will; it's not 'we'; it's 'you'. You are going to be a shareholder on this thing."

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Swent: He wanted an advisory contract?

Haldeman: An advisory contract with Kennecott sales [division] to help them for the first couple or three years until they could get an organization set up.

Frank said, "Fine, Raúl. Any other questions?"

Raúl said, "No." Mind you, we started at ten o'clock, and it was now eleven-twenty.

Swent: And you've sold $80 million. [laughter]

Haldeman: Raúl said, "Frank, I'm sorry; I've got a meeting downtown at noon. Can we get together tomorrow at the same time here?" Sure, that would be fine. "Would you mind if we make Bob recording secretary? You and I will talk our agreements, and he will write them up. You type them out for me, we can both look at them, and I will take them over to the president in the afternoon."

Frank said, "Fine. Bob, set up the meeting for tomorrow."

I said, "Yes, sir."

Lagarrigue said, "I have to go; I have to get to town." He decided he didn't know what to do, so he went out, got his car, and went right down to the *La Moneda*, the presidential palace. He walked in and said, "I have to talk to the president."

The president was told that Lagarrigue was there and said, "Have him come in right away."

Lagarrigue went in and said, "Mr. President, we've finished with Kennecott."

The president said, "Oh, God, what happened?"

Lagarrigue said, "They offered us and we bought 51 percent of the company."

Frei looked at him and said, "This is my *viga maestra*, my master beam of my structure--the copper business." That famous phrase is in history books.

The next day we met at ten o'clock, and I took the notes down. It didn't quite fill two pages, double-spaced, and that was the agreement we struck for a $240 million business. We sold 51 percent of the company, and I was managing it for them.

Swent: When exactly was this, Bob?

Haldeman: It was between January and February of 1964. That memo was given to the president, and they immediately made a press release of the results of the agreements with the three companies. He said, "I have drafted legislation that I needed enacted to make these things become effective."

Swent: These three companies were all announced simultaneously?

Haldeman: Yes. The word leaked out a little bit, but then the president went over national radio.

Swent: And you had heard what the results of the other two meetings were?

Haldeman: The next day, when the president went over the radio, the phones started to jingle. Anaconda called up: "You s.o.b.'s. You dirty so-and-so's."

Bob Koenig called up and said, "Congratulations. I think it was brilliant. I should have thought of it myself; I could have gotten some cash out of this investment." [laughter] Anaconda was furious.

Swent: Had you been aware of what Anaconda and Koenig had done?

Haldeman: Yes. Chile is a large country, relatively speaking, but it's a small one--Peyton Place; you know what that means.

Swent: How had you heard?

Haldeman: There are leaks of information all over the place. It's very hard to keep a secret in Chile. I knew in general what they were talking about.

Swent: Was there a club where you met people and this sort of gossip was circulated?

Haldeman: No. A fellow like Mr. Illanes and some of the Chilean supervisors that I raised up into key positions have an awful lot more information sources than a foreigner. They pick it up at cocktail parties. It leaks around. Then they can report to me. I needed those; I didn't have the ears. My intelligence service. Everybody had it.

Swent: I was just wondering if there was a country club or a downtown club.

Haldeman: No, nothing like that. Oh, there are, but usually they don't leak it to you there. They wouldn't have said anything to us. Of course, it took them by surprise; it took everybody by complete surprise. It was very bold and very good.

At that time Michaelson and I were talking, and we came to the conclusion that this would probably last two administrations--Frei and the following. Twelve years.

Swent: They never gave you credit for having thought of this?

Haldeman: Let's wait until a little later to talk about that.

So we figured maybe twelve years. It was now '64, and during the twelve years we figured the legislation would get by in two years, '66, but it took three years. To build a plant would take three or four years and would be done before Frei was finished; we'd have the first six years and get our money out. After that, if we made a profit, fine. We'd get $80 million in cash for the assets--51 percent of the assets--which is better than nothing. Anaconda didn't get anything out of their assets.

OPIC [Overseas Private Investment Corporation], who insures United States investments abroad, gave guarantees of expropriation--exchange and all of that stuff. Kennecott had been talking to Eximbank, and they put up $100 million. We put up the $80 million that they paid us and reinvested it back into the company. They had to print the money to do it, but we didn't put up any fresh cash.

Then the Copper Corporation put up the other $20 million, so that made the $200 million. Later on it inflated up to $240 million, and I had to go and get some loans from the Japanese. Then we went over and got a loan from the French-Italian Bank in Italy. They were selling against copper contracts--futures contracts. It finally cost $270 million, but it was completely financed.

VI MANAGING A CHILEAN COMPANY

April 12, 1967, Legal Constitution of the Company

Haldeman: Mr. Simián, the minister of mines, who got the legislation through from '64 to '67 to be able to make the joint ventures, resigned as minister.

The president said, "Mr. Simián, you can't leave me. I want you to be president of the company. You know Bob, and he'll be vice president. I want the two of you to run the company."

That's the way the thing was structured. On April 12, 1967, the company was legally constituted. We had the first board meeting, and all of the transfer of titles, shares, and assets were made. [looking at photo] You have here Mr. Simián at the head of the table. On his right is yours truly, on his left is Mr. Grant, and these are all the board of directors and the alternates.

Swent: Eleven people. Maybe we can get a copy of that picture.

Haldeman: I'll get a copy for you and send it to you.

In April, just before this was signed--almost simultaneously--Kennecott was in OPIC offices and the Eximbank, and their loan agreement was signed by U.S. government agency.

Swent: Where were those offices?

Haldeman: In Washington, D.C. The Chilean ambassador at that time, Radomiro Tomic, was present and signed for the Chilean government at the same time we were down here signing. At that meeting, the head of Eximbank gave a little speech, the Chilean ambassador gave a speech, OPIC gave a speech, and Mr. Milliken gave a speech in which, among other things, he said, "The man who is responsible for the whole idea of this joint venture is not with us today, and that's Bob Haldeman. He's in Chile at this moment, signing the papers and setting up the first meeting of this company. It was his idea."

Swent: So he did give you the credit.

Haldeman: But never to my face. [laughs] I don't care. That was perfectly fine by me. We got what we wanted.

Swent: How much difference did it make in your management?

Haldeman: During the period from '64 to '67, I had to sit down with Mr. Sáez. Raúl was a very, very busy man, and we'd meet a couple or three times a week, or maybe jump a week, and meet for an hour or two. He said, "Bob, I'm going to talk to you, and you have to draft it and write it up. Then send it to me, and I'll call you when we can meet again to review the draft."

I said, "I have done some work on it myself with my lawyers, so I'll give you a framework."

He said, "That's fine and dandy. Let me take a look at it. But I want you to have one thing clear. When I was general manager of Endesa," which is a government-owned company, "I wanted to do several things in the company, things that a general manager should do, because it was in all my powers-of-attorney vested to me as I took over the job. I couldn't do them because I had political restraints on me. So I want you to draft this up so that you don't have any restraints; you will have all of the full powers of the general manager, because you'll be responsible in front of the board, and you can be fired if you don't do it properly. I don't want you to be able to duck out and say, 'I couldn't do it because I had restraints on me'. That's what I wish I could have had when I was manager of Endesa."

So we drafted it up that way. We never took it out of the file in the short time from '67 to '71 that I managed the company. It never was referred to once. When you have a good agreement between the parties and you draft it up, you don't have to go back and look at the files on the thing.

And it worked out absolutely fine, though many things happened to it. We had to present our budget the following year, in '68 and the rest of '67. I had a contributions and public relations budget, which all American companies had--donating books to libraries, making pictures of the company, radio time, and all that stuff. The first thing that was criticized on the budget was when one of the members on the board said, "Bob, what are you doing with all this money? The government controls the TV station and the radio station; we get free time, so take it. Don't spend the money on that. The library? We have a budget for libraries; there's no need for us to give our money to them. We want the cash in here; we want it as dividends."

So there were no contributions, no public relations, and no donations budget; we ran a mining company for profits! It's entirely different when you put it on the other shoe [put the shoe on the other foot]. [laughter]

Simián and I became an executive committee. The board just decided that they wanted Ed and me to make the major decisions. They told us that we could let them know; they had trust in both of us. They knew perfectly well that Simián would not give anything that was not good for them, and I wouldn't give anything that was not good for us. So they decided that was a pretty nice way to have major decisions made.

Selecting Bids for the Mine Expansion

Haldeman: We had to choose an engineering construction company, and we had three companies bidding. (I won't mention the names of the companies.) Each of them was associated with local Chilean companies.

Swent: That was for this new half-Codegua plan?

Haldeman: Yes.

Now came the big political pressure through the Chilean associates of these companies to try and get the job. We got the bids in, and all my people evaluated it. I called Mr. Simián and said, "Before we have a board meeting, Ed, I want you to go over all these numbers with me." He's an engineer and understands all this. I had two of my staff there, and we went over and over it. The lowest bid was not the best. The highest bid was the best.

Swent: Best in what sense?

Haldeman: It had better people. Their way of determining their costs was absolutely crystal clear. The other one had all these hidden costs and threw charges on this and that; it was vague. You went through it, and you couldn't find out exactly who was going to be responsible for something and if there were overhead. They included things in general overhead, which shouldn't have been in overhead, at 60 percent. Right off the bat you know you're going to have to sit there and go to arbitration and chisel all the time.

The highest bidder had a super team of professionals in the business of mining, smelting, concentrater, and electrical, which were the principal components. We were getting an awful lot of flak from the lower bidder. He had a lot of political clout with the president and the Congress, and he was in the Christian Democrat Party. He put a lot of pressure on the government members of the board. He said, "We know we have the lowest bid." I knew we were going to have fireworks.

We went over the bids for a couple of days, and Ed finally became convinced that the [higher] bid we were going to take was the proper bid to have. I said, "After all, too, I have to be responsible for it, because I have the management contract. And Kennecott is responsible; it's not just me alone."

Ed said, "All right, let's have the board meeting."

At six o'clock that afternoon we had all the board in, and my project manager, Mr. B. B. Smith, made the presentation. He was an excellent chap. We put all the numbers up on the board, and his number-two man, Mr. Samuelson, went through the details on it. I said, "So the management recommendation to this board is to pick Group A." Silence.

Then, "What was that cost again?"

Nobody said anything, so I said to Mr. Simián, "Mr. President, do you think we could have a break now?"

"That would be wonderful, if you don't mind, Bob."

I got up, high-signed all of my people, walked into the other room, and closed the door. I left him with his representatives. An hour and a half later he came out and said, "Bob, these guys want to have the meeting tomorrow."

I said, "Ed, it would be a dead dog. By that time they'll get to *La Moneda* (the presidential palace)."

He said, "I know it. They wanted me to come out and ask you if you are absolutely sure that you are willing to stake your reputation, blah, blah, blah, and aren't you making a mistake?"

I said, "Ed, you can tell them, or do you want me to go in and tell them?"

He said, "Well, no, I'll tell them." He went back in the room, and later someone said to come back in, and the meeting went on. You can imagine the faces in there. But they awarded the bid.

Oh, boy, the flak flew the next day all over the place. Mr. Simián went over to see the president, and he said, "Mr. Frei, I want to tell you what happened. We went over the numbers, and I go along and share the responsibility with Mr. Haldeman. You don't always get the best job at the lowest cost."

Mr. Frei said, "If you people are responsible for it, and that's what you want, so be it." He stood up for it. Imagine! No political pressure on me. You couldn't have asked for any better relationship.

Swent: It wasn't a Chilean versus gringo split on the board, was it?

Haldeman: The four directors from the government were all Chilean.

Swent: Were the three others non-Chileans?

Haldeman: No. There was myself, Mr. Grant, and Carlos Tolosa, the Chilean business manager. And the replacement was a Chilean, too.

Swent: So it wasn't a strict gringo-Chilean split?

Haldeman: No.

So we got off to a very good start. We started to build a plant, and it went along just like clockwork. We had a really fine team of people there, and the contractors complied up to the last comma and dot. Everything went excellently.

Swent: Were you able to get your production up to what you had predicted?

Haldeman: Well, now we come up to '69, and elections are in '70. We get back into the same atmosphere of political things, and we are about 70 or 80 percent along on our construction job. All the pressure we were putting on was all we could do to get this inaugurated before Frei left office. Of course, that's what he wanted for his candidate, Mr. Radomiro Tomic, the Christian Democrat and ex-ambassador who was running.

By this time, 1970, we had--not including the construction, which were mostly foreigners--in our operating organization six expatriates, and all the rest were Chileans. The general manager of operations, the general manager of the service department, the manager of personnel, purchasing, and all down the line were Chileans. A top-flight team, really doing a wonderful job.

Swent: Do you want to say who did get the bid? It's a matter of record.

Haldeman: McKee, Bechtel, and Utah [Mining and Construction Company] had to split it up because of their specialties.

Swent: So they had a consortium.

Haldeman: Yes. One didn't have smelting experience, and the other one didn't have mining experience; so we decided we would pick out those things, and they would have to get together on it. It turned out excellently. We were under time and slightly over budget, but financing came very easy.

Inaugurating the New Operation, August 8, 1970

Haldeman: In August we had the inauguration of the new operation, and we organized a big show. The president just loved it. We had buses in front of the *La Moneda* in the central plaza downtown, and we had four or five hundred people invited, all the dignitaries in all sectors--politics, business, church.

Swent: And you bussed them all the way out to Rancagua?

Haldeman: We bussed them all in a big convoy with a police patrol in front of it, and we went up and had a big lunch in the warehouse at the smelter. We took the president and a group, and even the archbishop of the Catholic Church went along, too.

Swent: To give it a blessing.

Haldeman: Yes, that's right. We took him underground and showed him around, and we took him up in a cage with the brand-new hoist, where you could lift two railroad cars loaded up to the levels.

He was very impressed, and he enjoyed it--oh, gosh, the ribbons and all that kind of stuff.

Swent: It must have been a great day for you, too.

Haldeman: Yes. On the way back on the bus, here was the head of the church, the members of the board, senators, deputies, and representatives of the area. All of us were tired. It was about six o'clock in the afternoon, and we were coming down the hill on the new highway. We were just about into the central valley, and the president stood up on the bus, turned around, and said, "I make a motion that we all give a big round of applause to Bob Haldeman for the wonderful job he's done." A good politician. [laughs]

November, 1970; the Election of Salvador Allende

Haldeman: That was in August, and all was fine. The elections came in September, and then came the beginning of the end. Allende won. It was by the skin of his teeth. It was split in thirds again, and I think he won by 34.1 percent. The next man, the Conservative, had 33.7 percent. Usually you had to go to Congress for a second round; if a person doesn't get 50 percent plus one, Congress decides.

Well, we all knew what Allende was going to do; there was no doubt in anybody's mind. I happened to be in Buenos Aires on election night. My eldest son and his wife, my first grandson, and my third son had come down for summer vacation in September. I had invited them down for our twenty-fifth wedding anniversary, and we went to the beach. Then we took a trip to Buenos Aires, and we were going to go up to Rio [de Janeiro]. Then the kids would go home, and I would come back with my wife. I thought the Christian Democrats would win--not by very much, but with all the political machinery they had--.

We were in the Hotel Plaza in Buenos Aires on election night, listening on the radio. The vote returns were coming in, and faces started to get longer. The grandson was getting tired and wanted to eat. I said, "I'm losing my appetite," so we had them send up two big tureens of chicken stew, called *cazuela de aves*, and a couple of bottles of wine. We sat there, and by twelve o'clock at night it was very obvious what had happened. So I had to get back to Santiago. Oh, it was horrible.

We had tickets to leave the next afternoon to go to Rio. I told the kids, "You go right ahead. Here's the money, and you make the rest of the trip. I'm going to stay." I got a couple of seats for my wife and myself on a flight around noon. We got into the airport--it's the day after the election--and it was empty. [In Santiago] we got in a taxi, and usually the taxi drivers are full of beans, but there was absolute dead silence. Gloom fell over Santiago. We drove through the middle of town, and there was practically nobody out. People were scared.

Then we had to go through all the rigmarole of waiting for him to have his session with Congress. Naturally Congress approved of Mr. Allende's election. Then all of the morale fell apart. We were just one part of a general panic situation in the country. Strikes started up, labor indiscipline, groups of students running down the street shouting and throwing bricks here and there. People were threatening to go out and take over the private homes.

Allende was up on the balcony, waving and shouting, "*Compañeros*, I'm going to put legislation in the Congress to get peoples' courts and turn out the judges. The judges are no good; we'll have popular tribunals." All of the propaganda. I even have a little book of his program that they sold on the street. I had bought it six months before he was elected, and four months after he was elected he followed the book perfectly. People didn't believe it.

Chaos happened. People started to scramble. The Chileans who had money figured that it was the end of their life here. You could go out and buy a brand-new car--they would give you the keys for a thousand dollar bill.

VII THE ALLENDE REGIME, 1970

A Scene of Chaos in Santiago

Swent: So you could buy all sorts of things--houses, rugs, everything?

Haldeman: Yes. It was a scene of chaos. We had a house on Costanera Street, the one you walked across today.

Swent: By the river?

Haldeman: Yes. In fact, it was just a couple of doors up from the street you went up. I had bought the house. It had an 18,000-square-foot lot, and I had 8,000 square feet of house, servants. I paid U.S. $54,000 for it. Before the election I probably could have sold it for U.S. $100,000. The election came and Allende took over, and I figured, "I'm going to have to leave the country sooner or later." A bill had gone to Congress for expropriation of the mining companies. In February I sold the house for U.S. $5,000. Four years ago they purchased it and tore it down to put up a building. It went for U.S. $500,000.

People were panicking. You could have bought beautiful homes. Some people did buy four, five, or six homes, and they're millionaires today. They took a chance on it. It was a gamble. Nobody had any faith whatsoever that we weren't going to become another Cuba--and Allende pledged that.

"Things Started to Unravel at the Mine"

Haldeman: Things started to unravel at the mine. We had this new plant starting up, and now we got sabotage. The pump would shut down, and we'd open it up and find bolts and nuts in it. The thickener rakes stopped in these 325-foot thickeners and were all bent over; somebody had thrown a railroad tie about four feet long in the bottom. It caught the rakes and doubled them up.

At Anaconda, the workers decided they were soon going to take over management, and they were led by their political hacks and the union leaders, who in copper mines were in the majority --socialists and communists--left-wingers. In Chuqui, on one shift in the afternoon, the union showed up with two lambs. They shut down the converter and turned it over on its side. You've seen what a converter is; that's where they put in the matte and blow the air through it. They turned it over so that the mouth was alongside the floor and set up a barbecue rack. Production shut down, and they all had a barbecue and got drunk on that shift. Anaconda still had the property.

It was just absolutely chaos. In February or March they dug up out of the files an ancient law; I think it was enacted in 1887. For some reason, at that time it said that in vital or basic industries in the country, if for any reason the government feels they are being mismanaged and go against the interest of the country, they can appoint *interventores*, or watchdogs, overseers, for those key positions to make sure that the people in those positions aren't destroying the operation of the country, the economy, et cetera. They dug that law up.

The next day I was advised that the government was sending over six people: one for my job, Grant's job, the three managers, and the controller--the cash. We had to report to them, and they were privy to all information and had to sit in at all meetings. They could sit in my office and watch what I did all the time; I had to make office space for them.

I got an interventor by the name of Mr. Arancibia, an economist, twenty-eight, and a socialist. Mr. Grant got an engineering student from the university, a communist. The lawyer got another student, who brought his girlfriend as secretary. They locked up at three o'clock in the afternoon and made love on the sofa. [laughs] It was just chaos. You can't imagine.

Mr. Simián left his post as president, and he went to Ecuador. Mr. Arancibia took his office and took this [points] picture down off the wall and put up a 5 x 6-foot picture of Che Guevara right behind his desk.

Then the Congress started a bunch of investigating committees, because they were saying that we were sabotaging; we were putting the nuts and bolts in the pumps, and it was our fault that the production wasn't up. [They said that] it was Anaconda's fault that their copper production was going down. Well, the guys just didn't want to work and shut the mine down for barbecues and so forth. It was absolute chaos. There were incidents in the street--rock throwing and the like. It was horrible.

Swent: Were there threats against your life?

Haldeman: Not against my life. This fellow Arancibia--we were having a meeting out in Rancagua--he said, "Take me along with you."

I said, "Fine. Come along." Going out to the meeting, I said to him, "You know, you fellows are destroying the organization. The Chileans, your own people, are leaving the key posts (I didn't have any foreigners in key posts). Your labor force is not making any effort to keep the production up. What are you after? This is going to destroy the economy."

He said, "No, you have to understand. Our system that we're putting in is an entirely different system. It's not a capitalistic system. The most effective way is that you have to destroy everything that's in there and start to rebuild the way we want. We understand what we're doing. We understand the loss we're causing the country, but that's just the price of going over to our type of government."

That's fine; it's up to you.

Swent: That's the classical Marxist theory, isn't it?

Personal Harassment

Haldeman: Yes. I was now renting a home in Santiago. I had decided I would send my furniture out in my boys' names; if it was in my name, I'd probably have trouble at customs getting it through. So I sent all the furniture that I wanted to keep through German diplomatic pouch to Frankfurt, Germany. Afterwards it was transshipped to New York and put in Bekins' warehouse. I had three or four hundred paintings, and I sent them out to the airport to be shipped.

Swent: These were paintings you had painted yourself, as your hobby?

Haldeman: Yes, my own. The fellow at the airport said, "You can't export these; these are national treasures." [laughter] "The only way you can export them is if you get a stamp of the National Museum, from the curator, saying that these are such-and-such and can be exported."

This young lady, Blanqui, who is now my wife, was a secretary of the legal department at Braden. I had a secretary, Amala Grassau (she has since passed away), and had the two girls take care of all of these things. Blanqui was a friend of the curator. She went over and had him stamp all of these paintings and register them: "Landscape #1, Still Life #4 and #7." She was going to ship them to New York, and they got out to the airport. They were going to go on air cargo. This guy opened up the box, and the bill of lading said "Haldeman." He said, "Half of these won't get out," and just threw them in a wastebasket.

Swent: Paintings you had painted yourself? How awful!

Haldeman: Yes. Even my name was on it!

Then I found that my telephones were tapped. We had telexes at that time, and those were intervened, tapped. My desk was being rifled every night. So I got a hand cradle. It has one crystal cut in half. The other half went up to Michaelson in New York. You put the telephone in this cradle, and the crystal will scramble it on the crystal's frequency. The current that goes through every crystal is different. He had the other half of the crystal, so we could talk in it; but if you were listening in, you couldn't make it out. You can't decipher it, because there are billions and billions of wave patterns, and each crystal is entirely different.

And how do you scramble a telex? If you sent a telex, you type it out on these little strips of paper with holes punched in it. Then you feed it into the machine, and it goes dit, dit, dit. You get an attachment, and you make a dummy tape and just go over the keyboard any way you want. You make a copy of that and send a copy of the dummy up to the States. You keep the dummy down here and call that roll #1. If I sent a message, I put on it, "Message to Mr. Michaelson, roll #1." They put the two together, and both tapes go over; they're scrambled. When it gets up there and his secretary puts roll #1 on, it will print the other tape; it decodes it.

Showdown with the Government Copper Corporation

Haldeman: Now it was June, and I was called to the Copper Corporation by the minister of mines and the head of the Copper Corporation. I was to be over at the Copper Corporation office at 10 o'clock in the morning. I met them, and they took me into the board room. In the board room there are eight or ten young guys with *boinas* [berets] on--Che Guevara style--all sitting around. I didn't know who they were; they were political hacks. They were all smiling and talking among themselves. I went with my lawyer, Mr. Valdivieso, and one of the three gringos, a Britisher who was head of the accounting department--the controller--Mr. Aggleton. Mr. Grant was out in Coya now, still there trying to hold things together as best he could.

We sat down, and the minister said, "Mr. Haldeman, I'm sorry I had to call you in, and I'm also sorry that I have to tell you that there have been these acts of sabotage, Chileans have been leaving the company and you have been paying them severance pay in dollars," which legally I was entitled to. They had a whole list of things. He said, "Those are very serious matters."

He looked at me, and I said, "Yes, they are, sir."

"Well, I have to tell you that we are going to file suit against you for infraction of the civil and penal codes for all of these violations."

Swent: A personal suit?

Haldeman: They were all smiling. My lawyer started to speak, and I kicked him in the shins. I told him quietly, "Shut up. Don't say anything." I looked at the minister, and he was smiling. I said, "Yes, Mr. Minister, that's very serious. I just don't know what to say." He didn't say anything. Nothing happened. It was a showdown, and I didn't defend myself.

The head of the Copper Corporation repeated some of the charges, and I said, "Yes, I understand that they are very serious."

He said, "Yes, it's very serious."

You've heard of Pavlov's dog and conditioned reflex? In any meeting where you are the one invited, if you stand up to leave, everyone stands up. I said, "Is that all, Mr. Minister?"

He said, "Yes."

I said, "Mr. Vice President, is that all?"

"Yes."

I stood up, and everybody stood up. I said, "With your permission, I'll be leaving." They all collapsed.

I walked by the minister, and he said, "Bob, just a minute," and grabbed my hand. "I'd like to talk to you."

I said, "Wait a minute [for my lawyer]," and he said, "No, just you alone."

Two of them took me in and sat down. "Do you want coffee?"

I said, "No, thanks."

"These are very serious charges."

I said, "Yes, very serious." I agreed with everything, and he was becoming more frustrated. I said, "I'll just have to go back and see what I can do about this. Can I ask you a favor?"

"Anything you want."

"This is so serious that I would like it if you would give me forty-eight hours to leave the country."

He said, "No, that's not the idea. That's not the purpose of all this." [laughs] They wanted to put me in a kangaroo court.

I had a group of Chileans who still stuck with me. They were loyal, and they wouldn't take any orders from these overseers, managed the company the way we wanted to and it was frustrating them. The Anaconda people just melted away and practically turned it over to the overseers before the legislation came through.

I said, "Well, I'll be in touch with you." From the Copper Corporation you walk a block down, and there is the U.S. embassy in the same block as the office building. I walked in there to see Ambassador Korry. I said, "Mr. Haldeman to see Mr. Ambassador."

He said, "Come right in. Bob, how are you?"

I said, "I'm horrible. I've just come from the--," and he said, "Don't say a word."

"James Bond Stuff"

Haldeman: He went to his desk and got out a little pocket radio. He said, "Let's go over to the coffee table." We sat down, and he put the radio on the coffee table and turned it up as high as he could. He said, "I am not too sure if I am bugged in this place."

I gave him the story. I told him that they wanted to put me in the clink and damn me in a kangaroo court.

He said, "Bob, the only thing I can do for you is send you cigarettes to the jail. You better call your head office and arrange some way to go to the States."

We finished our meeting, and I left and went to the office. I got on my scramble machine and explained to Mr. Michaelson what happened. I said, "Mike, you have to send me a telex." At this time we were out of cash in the company. They had frozen the exchange rate, and the government representatives were telling us that we, because we had the management contract, had to put up the deficit money to meet the payrolls. I said, "We just don't have any. We usually get a loan from your local banks."

They said, "No, no, no; they won't give you credit." We were in this hassle.

I said to Mike, "Make the tenor of the telex that you want me up for this important meeting of Kennecott board to decide how we're going to finance meeting the payrolls and so on." I knew it would be intercepted. Let's say this was a Wednesday, so I said, "You want me to leave tomorrow, Thursday, to be at the board meeting at noon Friday at Kennecott," and so forth. I got off the scramble, and in came the telex.

I went home that evening and talked to my wife. I said, "You better start looking around the house for what you want, because we're going to make a trip tomorrow night to the States, and I'm going to limit you to one grasshopper suitcase." Fine. We had arranged a coding on the thing, something about going out to dinner at nine o'clock, because I knew my phone would be intercepted.

I also had my drawers opened, and I couldn't avoid these guys and have special meetings with Mr. Grant without them present. So I would leave a note in the drawer, "Call B. and be in Coya tomorrow at 11 o'clock; meeting with Grant." I would close my drawer and put two thin strips of Scotch tape on it. In the morning I would come in, and they had already opened the drawer, and Mr. Arancibia would be on the way to Coya for the meeting; and Mr. Grant would cross him on the road to Santiago. [laughs] That was the only way I could get a meeting alone with him. It was James Bond stuff. They changed the locks on the office building, and I got locked out. They didn't give me a key.

Swent: Was Grant being threatened, too?

Haldeman: No, but he was worried. But the Chileans are not violent in this sense. It's all right to hassle you to the maximum degree, but physical injury--they're not that kind of people. They're a cut above. In Peru it might be a little bit different.

Leaving the Country

Haldeman: I went to the office the next day, everything normal. Last night I had called a lady in a travel agency here who I had known for years. She usually arranged my tickets through the office in Rancagua--the company. I had all these clerks who did this for me and got my permit to leave the country, the *salvoconducto*. Of course everybody in the company would know I would be leaving that night. So I asked the travel agent directly, "I want you to get my tickets, and don't let the company know. Here is my credit card; charge it to that, and I'll bill the company afterwards. You get me my *salvoconducto* [police safe conduct permit], and don't let anybody know." I explained to her, "I'm in trouble." She got it all ready.

Usually three or four times a week I would invite two lawyers and another fellow in the office to a men's lunch bar, shoot liar's dice, have a good lunch, a lot of good wine, and then come back to the office. That day, my last day in the office, I went through all my normal routine. I called up the boys and said, "Let's go and have lunch," and we walked out of the office. I took a little folding leather briefcase that you carry under your arm--it wasn't one with a handle--with the few papers I wanted to keep. I left everything in the office just exactly as it was, and we went over and shot the dice. I couldn't play very well, and the lawyers knew exactly what I was doing. Mr. Grant knew; I had advised him.

I went from there back to the office and called my wife to tell her about the "dinner engagement" we had. That morning I had told the two secretaries, my secretary and Blanca, and asked the lawyer, "I want permission to have the two girls go out to the house and make an inventory. My wife said she wanted to give things to charities down here." I had a basement full of liquor; I did a lot of entertaining. I had told these girls in the morning to take their notebooks and go over to the house--not tell anybody where they were going; just say they were out on sick leave. They went over, and all morning they were with Doris. In the afternoon I got there, and they were pretty well finished with their job. I had all these records and tapes, and I said to Blanca and Amala, "You girls can have all the whiskey and food that you want." They said they didn't drink that much, and I told them to give it to their friends.

They left about six o'clock. I had a chauffeur, who had worked for the company from time to time, come and pick me up under sworn secrecy. I got to the airport, got through security police with no problem. My two lawyers were out there, waiting for me. They were watching as I went through International Police. I walked out to the plane, walked up the little steps, and got in the plane. It was wintertime, clear, a moon, snow-capped mountains (that was the last time I saw them for about three years). I sat down in first class, and the girl asked, "Can I offer you something?"

I said, "You better bring a double whiskey, and when you go back, bring another one."

I had a nice whiskey and sat back. One motor started, and then another motor started up. They pulled the steps away and closed the door. They were just about to rev up and move the plane, and all of a sudden, as I looked out the window toward the terminal, I saw two guys in white shirts, black hats, and black pants. They were Braniff employees with some documents in their hands. The pilot slowed the motors down, and I thought, "Oh, mother of Christ. Now what happened?"

I called the stewardess and said, "Give me another whiskey." I thought it might be the last one I would have for a while. They put the ramp up again, opened the door, the guys came in and looked up and down the aisle, and they went and talked to the pilot. Apparently they had forgotten to transfer the proper papers into the plane. They went out, closed the door, the motors revved up again, and the plane took off.

Well, that ended twenty-nine years in Chile.

Swent: How had you let Grant know that you were leaving?

Haldeman: Over the scrambler, and we had talked about it before. This was about a week or ten days before the bill had to be voted in the Congress for expropriation in July. Grant knew exactly how to handle it with the lawyers. But we figured it was better not to have me in a kangaroo court. Grant, working out in the plant, wasn't known. He wasn't a political target; he didn't mean anything in the whole political picture. I was the fellow they were after. That's the trouble with being famous, I suppose.

Anyway, I got to New York and called up Mr. Michaelson. He said, "Where in the hell are you?"

I said, "What do you mean? Christ, I'm in New York in the Hotel Barclay."

He said, "Well, an awful lot of people are looking for you."

I said, "What do you mean?"

He said, "The Chilean foreign department called up Washington State Department and demanded to find out how in the hell you left the country, who gave you permission to leave the country, and where are your papers."

Braniff's manager, Carlos Brunson, sent a telex and said, "Bob, I need all your documents and everything. The government is after me." I sent a telex that said, "Carlos, tell them to go to hell. Best regards, Bob." [laughs]

I snuck out under the wire. Just made it. My wife unpacked the suitcase, and she said, "Good heavens. You know what happened? I forgot to bring underwear." [laughter]

So we just left everything as it was.

Swent: You did get some of your furniture out?

Haldeman: That was out ahead of time, the nice pieces that we wanted to save. I left all my clothes.

Swent: It doesn't matter at that point, does it?

Haldeman: Nope.

Swent: Did they ever go after Grant?

Haldeman: Yes. The bill went into Congress in what they call the *sesion plenaria*, a joint session of the Senate and the House of Representatives. Everybody of all political parties showed up; there wasn't a single absentee. Every vote was for nationalization, from the Right to the Left. There wasn't one person who abstained or who walked out. There are your political parties for you. Some of those people who voted for it are alive today. You ask them, "Why didn't you vote against it?"

"Well, Bob, those were political times. You have to think--." What are you going to do?

The bill went through, and the government took over. I was now in New York in an apartment at the Beekman Arms, and there I stayed from July '71 until April '72. I participated with some of the staff preparing white papers--our legal actions taken against the Chilean government for its expropriation without compensation or indemnification. We spent a lot of time on it. I don't have a copy of the set of books, but they were very well documented from history and told the whys and wherefores. We wanted just compensation for the expropriation.

It was now December. My wife, at the end of 1970, had a lump appear on her breast and she had a mastectomy in the beginning of '71. When they took her breast off, the cancer had gone through the lymph glands on the left side, and it was running through her system. At least she could have some treatment in New York. That's where she had the operation, and then she had come back to Chile.

A Disappointing Farewell to Kennecott

Haldeman: As the months rolled by, Kennecott had nothing for me. From time to time I said, "Mike, what's with me? What are we going to do here?"

He said, "Take it easy. Relax. You work on these papers. We'll find something." It really worked out that by March of 1972, I realized that there was nothing for the bright boy from Chile. I was being frozen out. In fact, they put me in an office, well furnished by office standards, of somebody who had left. I figured out who it was. Over the following months they took out everything except one desk, two chairs, and a coat rack. Then they took the direct dialing off the long-distance telephone.

So I said to my wife, "This is not for us. I don't want any part of it. What do you want to do? You've been following me all of these years; I'll follow you."

She said, "I'd like to live in a warm clime. I like Florida." We had some friends who were in the U.S. embassy who retired from the State Department and took up living in Sarasota, Florida, on a small island, out in the bay, called Bird Key.

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Haldeman: So I said that was fine. I talked to Mr. Michaelson and said, "Mike, I have a personal problem, and you people don't have anything for me."

He said, "Be patient."

I said, "I don't think that's the issue. Let's not get into that. I've got my wife here, and I'm going to do what she would like to do for the time that she has left. I think it's only fair to her."

He said, "You can do what you want to, Buster"--that's the way he always talked--"it's up to you." He was nice with me.

I said, "According to the Chilean law and my work contract in Chile, had I stayed on the payroll, under law I would have had certain severance pay proportionate to the number of years." Because I didn't qualify for the Kennecott retirement program. I wasn't a Kennecott employee; I was a Braden employee. Furthermore, at that time, in '72, I was fifty-four. From fifty-five to sixty you had to be dying to get early retirement for health purposes with reduced benefits. From sixty to sixty-five it was if they wanted to give it to you; and at sixty-five whether you liked it or not, you were out. I didn't qualify for any of those things.

Mike said, "We'll see if we can't get you under the plan." At this stage, I really didn't want to argue too much; I just wanted to leave the company. I was very disappointed that after thirty years I got this kind of treatment.

So came April 1, my last day. No gold watch with engraving, no farewell dinner. Michaelson said goodbye to me, and Milliken didn't. I knew he caught the commuter out to Darien, Connecticut, at four o'clock, so I called his secretary, Melba, about three-thirty, and asked, "Is your boss going to leave?"

She said, "He'll probably take the three-fifty-five."

I said, "At three-forty I want to talk to him."

"What about?"

I said, "I just want to talk to him, Melba."

She called me back and said, "He'll receive you at three-forty."

I walked in at three-forty and said, "Frank?"

"Yes."

"I want to thank you for everything you've done for me after these years. As you know, I'm leaving today."

"Yes, yes. Well, wish you luck."

I just wanted to make sure I was more of a gentleman than he. That's what I got from Mr. Milliken for twenty-nine years of service.

Swent: Did he shake your hand?

Haldeman: Nope. He was at his desk; he was busy.

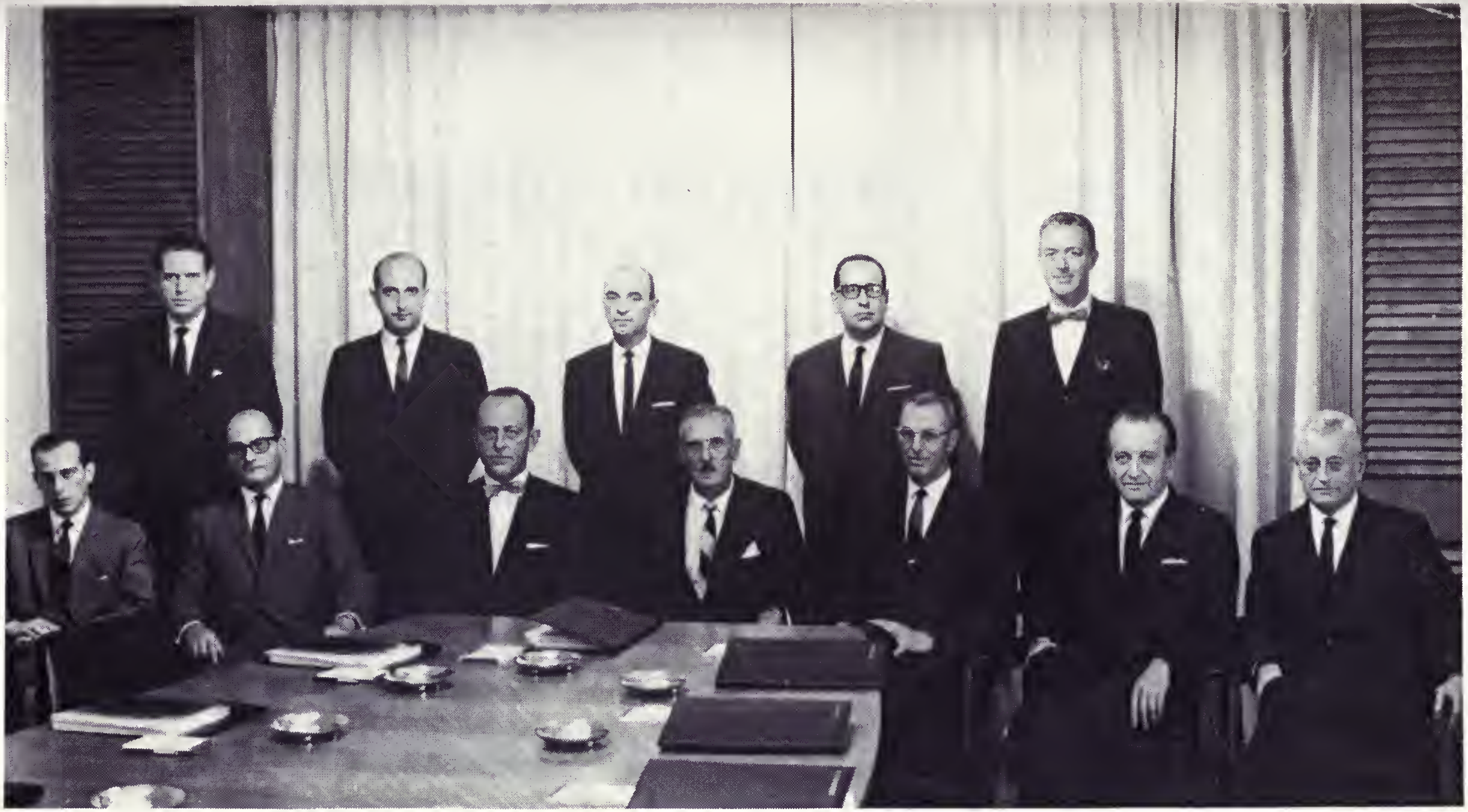
I told my wife years ago when I got into management, "One thing about companies: they're cold, and you always must assume that you are expendable at any time." Another thing, too: you can't make any friends with any of the people who work under you, because you have to be ready to fire anybody at any time. The same way with the people above me.

And we started to prepare our own little retirement program, which today I am living on--not on Kennecott. That was the end of my days in Chile and with Kennecott.

Swent: Then you went to Florida.

Haldeman: So we went to Florida.

PRIMER DIRECTORIO DE LA SOCIEDAD MINERA EL TENIENTE S.A.



SENTADOS: Señores, *Benjamin Mira, Jose Claro Vial, R. M. Haldeman, Eduardo Simián Gallet (Presidente), Byron E. Grant, Sergio Baeza Pinto y Carlos Tolosa Fontecilla.*

DE PIE: Señores, *Antonio Ortuzar Solar, Jorge Cauas Lama, Eugenio Silva Barros (Gerente Secretario), Enrique Evans de la Cuadra y Louis Bayless Woodford.*

Constituído en Santiago de Chile, el 13 de Abril de 1967.

VIII BUILDING A NEW CAREER

Correcting a Story Told by James Boyd about Level B South

Haldeman: As we go along, I am remembering things that happened that I passed by. I'd like to go back to one. This happened in about 1965 in the engineering of this new expansion program of President Frei. I recall from reading the transcript of your interview with Mr. James Boyd[1] that he had sent some geologists years ago down to Chile when he was head of exploration at Kennecott. He told New York that according to his geologists, management was bypassing millions of tons of great blocks of ore at 2 percent or more copper. He alerted management, but they said they just couldn't do that. Then he said that apparently some people's feelings were ruffled down there, and afterwards they did go back in and mine it.

Well, a little bit of history on that: Boyd was right in one sense; they were bypassing the ore. Way back in 1950, in the southern end of the ore body--this ore body plunges from south to north--and this was in the higher levels where that part of the ore body at the very far end, was highly oxidized, altered ore, sericite, which is a clay material. In the andesite, the plagioclase and the other feldspar minerals had converted into sericite with the alteration. When you cave it and try and draw it out of the chutes, it turns into mud. It was close to the surface, and all the rocks above fractured and filled with water in the springtime when the snow melts. When they undercut this rock and go in to draw out, the first ore is nice and dry. Afterwards it would start to turn into gumbo, and then you would have these runaways or explosions of mud. They would come in and fill the drifts, and it was almost impossible to mine.

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[1] James Boyd, Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive, 1941-1987, Regional Oral History Office, University of California, Berkeley, 1988.

The mine superintendent at the time decided that he would change the name of the level, which was B South. He called it B South Deferred. If you ever looked at the mine records, that's exactly what it says. He passed it off to the next superintendent and the manager, Mr. Turton, who was fully aware of it. It was just too hard to get into it, and mining continued in a nice, dry, easy ore to get out; and the grade was still high.

About this time, that ore was left further and further away. Any measures to get in it would be progressively more difficult and more costly. Now we come up to a point where we were going to expand production, if the government approved all these laws that were required. We had this 280,000-ton project on the board. I was the manager, and all of these decisions were deferred to me. I decided there must be some way to handle it, and we had better do it now; otherwise it would be lost. It would be anti-economical to get into it, because at the time they want to get into it, say ten or twenty years from now, they would have to open up a completely new mine to get in.

So how did we handle the thing? I decided to send one of our mine engineers and a couple of his assistants to go around the world and find out where they had problems--mud, gummy ore, explosions of wet ore--and how to handle them. Which would be the best methods? He was several months on the road.

Swent: Who was it that you sent?

Haldeman: Ed Sanderson. He came back and said, "Well, I've seen one thing that we should have thought of before, which is a continuous loader." Why would this be the solution? There was a transfer level in the mine, which was Teniente One. To get to the deferred ore you would go south from the main shaft in the center of the ore body. The trains would go from south to north, and dump in the ore passes [that] go up from Teniente One to Teniente Five level. This was "poison ore," if you want to call it that--the difficult ore to mine.

When they would mine it, it would start to get real muddy and gooey. They would get it into the ore passes, and they would run the trains underneath and open the chutes to fill the trains. They had a long string of five-ton cars, maybe fifteen, twenty, or twenty-five of them, with big engines. They would pull a car underneath, raise up the chute, and have to work hard with dynamite charges, bars, and picks. Finally it would run--pffft, like squeezing a tube of toothpaste--and fill the car. Then you'd have to shut the chute off, and immediately all the mud compressed, and it would take another ten minutes to fill the next car.

Sanderson saw some granby cars (I think they were called), that had lips that went from one car to another, so that if you opened the chute in the first car and got the ore to run, then you would have to give signals to the machine operator--the engine operator--as to how fast to move that train through there. You just let the mud run out as fast as you could and fill all the cars, up to the end, and then shut it off. You could get twenty or twenty-five cars filled with one straight flow.

We had people design the cars, and built them in the local shops throughout the country. We got them up in the mine, and prepared the whole level. By the time it was ready to start our major expansion program into operation, we gave it the dry run, and it worked. We mined out every last ton of the 2 percent ore, and Jim Boyd, if he were alive today, would be very happy. [laughs]

Teaching Anaconda Company a Lesson at La Africana Mine

Haldeman: That carries us up until 1971, when the properties were expropriated. The second flashback that I had goes back to how fate brings things back and forth into my life. Let's roll the clock back to 1969. Legislation had been enacted in 1967, and Anaconda was proceeding along with the expansion of their existing operations. They had a lot of pressure on them that they didn't go along and allow the Chilean government to buy some equity into their big Chuquicamata and El Salvador mines. At that same time, they changed presidents. Operating president Charles Brinckerhoff went to chairman of the board, or whatever title he had, and took residence in New York. Jay Parkinson, who was a lawyer for Kennecott in Salt Lake City, was appointed the head of the company. He had absolutely no feel whatsoever for the situation here.

One of Anaconda's properties was a small copper-vein mine just on the outskirts of Santiago, beyond the airport. It was called La Africana. It was underground, narrow vein, maybe two to five meters wide. They had been working in there since 1910 or 1920. In the time of Mr. Ibáñez as the president [of Chile], Ibáñez asked the company if they couldn't do something, as all presidents do, to increase production. What attracted President Ibáñez at that time was this small mine that Anaconda had on the outskirts of Santiago. He asked Mr. Clyde Weed, the chairman of the board at that time, if, along with helping out the government with increased production in the north in the big mines, he wouldn't remodel that mine and make it a model example of small mining industry that could be shown to the Chilean small mines in the north, to show them how Americans run small mines at a profit.

Most of the small miners in the north didn't really know the way to run a small mine. They were always asking for government subsidies and price subsidies; they were the first ones to cry.

Mr. Weed said, "Don't you worry." He bought a lot of second-hand equipment from the United States and went down and built this model small mine, which was very fine. It was around 1,500 tons of ore a day. There was a little townsite out there. Why did they build a townsite just twenty miles from Santiago? Because Anaconda had townsites at all of their mines. Butte was the same way in Montana.

We had the inauguration, and I happened to go to that inauguration in the fifties--'54, '55, or '56. The president was very happy with it, and of course that made him very happy with Anaconda. It was just a little mine that had been sort of a hang-on. It wasn't losing any money, but it wasn't making any kind of money that Mr. Parkinson thought it should make, because Anaconda was a big company. So he said to his local people here, "I want to get rid of this. Sell it." And he put it on the market.

Well, he didn't get a chance to put it on the market, because a group of Chilean businessmen, young fellows whom I had known for many years, decided that they wanted to get into the mining business. They were the yuppies or young Turks of that time--these young people with financial bents and minds, very clever boys. They went and talked to Anaconda to convince Mr. Parkinson that they would buy the mine and start to get into the small mining business. So they struck a deal.

Now it was '69, and they had the mine, but they knew nothing about mining. I was with El Teniente, and they asked me, "Bob, you're the only guy we know that we trust about mining. Would you be on our board?"

I asked Mr. Michaelson, and he said, "Oh, fine, but don't take up too much time on it."

I said, "Don't worry, I won't; it's a small operation." So I became a technical director on their board. If I stayed four years, I would have, free, 3 percent of the shares for attending board meetings and helping guide the management.

They had this small mine, plus on the bigger property they have out there in the Lo Aguirre Valley, another five or six kilometers to the west. There was an ore body called Lo Aguirre. This had been mined by the Jesuits in the 1800s. It wasn't a very big thing, maybe twenty million tons of ore and a strange sort of secondary deposit. You could see some stains on the surface, and they had gone in and high-graded it. But the Africana mine was running out of ore; it only had three or four years more. So Anaconda thought that was a real good deal--that they would slip it off for maybe $8 million to the Chileans, knowing it was going to run out of ore, and let the Chileans worry about the other ore body. They weren't interested in opening up a small mine.

I got on the board, and the manager was Carlos Silvester, a very fine Chilean engineer, quite a gentleman. He had been manager out there since '50, I guess it was--almost twenty years. I went out to Carlos and said, "Let's get out the maps and find out why the vein peters out here. It just doesn't make very much sense."

Carlos said, "Mr. Haldeman, I don't have the maps."

I said, "What do you mean? Where are the geological maps of this company?"

He said, "They're in the New York office. Anaconda never lets any of their geology maps out to anybody to see them in the field."

I went to the Chileans who bought it and said, "You get on the telephone to Mr. Brinckerhoff and tell him you paid $6 million for this thing, and that included the maps. Either he gets them down by air courier, or you'll file suit against him." They did, and the maps got down by a special messenger. [laughs]

Mr. Silvester didn't know what to do. He was a mining engineer, and he was fascinated. He just loved the little property he had been tendering along. He said, "All right, let's take a look at the maps."

Swent: He had never seen the maps?

Haldeman: No. Anaconda wouldn't let you do anything. That was a closed corporation.

We rolled out the maps and looked at them, and both of us said it was impossible that that vein stops. There was no geology of anything except the vein, and it had only had in all its life about three diamond drill holes. They just went down and followed the vein, like the old-time miners did. I said, "Carlos, do you have any hunches?"

He said, "I have a hunch there's a fault out there, that the thing has been displaced."

I said, "Do you have any diamond drills?"

He said, "No."

I said, "Well, you rent one."

He said, "I can't. I'm on a tight budget."

I said, "You go out and rent one. You are authorized to. Get somebody working on it, and give me a call when you find something."

Carlos was just thrilled with that. He scrambled around here and worked there, and all of a sudden I got a telephone call. He said, "Bob--"

"What?"

"Come."

"Why?"

"Come." I went out there, and they had the drill core. We found the vein; it was displaced about seventy feet. Of course, he was so thrilled.

I said, "Now we're going to teach Mr. Parkinson a lesson." We prepared a press release, which hit all the press, that the local Chileans took the mine with only three years' reserve, and in four months found an extension that would last another fifteen years. [laughter] Poor Anaconda died of shame.

In 1969 or '70 the Chilean board asked me what to do with the other ore body. I said, "Let's get a feasibility study," and they authorized me to do what I wanted. I went and hired McKee Engineering. There was a man in there who used to work with me as a smelter superintendent in Caletones, Mr. Weatherston. He came down, and I said, "Vern, I want a quote on a feasibility study with a small company that doesn't have much cash. Give me a fixed figure, and I want all this information. If you can't, I'll call up Bechtel." In four days' time we had a telex with everything I wanted for a very nominal fee, and we made the first feasibility study of Lo Aguirre mine; that's the one where we have the bacterial leach process now.

Came 1971, and came Mr. Allende. They took the mine away from the Chileans. Anyway, I didn't work the four years to get my 3 percent of the shares; I only worked three years. I'm not sure I would have wanted the shares anyway. [laughter]

Tracking the Price and Production of Copper

Haldeman: Another flashback, I think to 1969. At that time the price of copper started to run away.

Swent: You have a big chart here with several things plotted. What do you have?

Haldeman: The price of copper, the stocks of copper in the exchanges, the manufacturing index of prices of equipment and machinery, and the world stock of copper (not just in the exchanges).

Swent: This is the non-socialist countries.

Haldeman: You can see here that when the total stocks of copper go up, the price goes down. When the stocks go down, the price goes up. It follows very consistently every year. The last I had was '89, and I just finished plotting it through '93. In '87 or '88, the price went up to 90 cents and finally got up to $1.20 in the nineties. The stocks started to pick up, the mines came into production. The stocks are now up to about the 700,000 level and the price is down to around 70 cents, where it was back in '84, '85, '86 and in '74, '75, and '76. That's what controls the price of copper--supply and demand.

Swent: When you say stock, do you mean supply?

Haldeman: The amount of copper that is in the warehouse to be sold. If I'm buying copper and there is a scarcity of it on the market, I'll pay more and keep the warehouse in my own backyard. When a lot of copper is out on the market, the heck with it; I'll tailgate. Tailgating means, "I'll call you in the afternoon;

deliver me five tons in the morning." Of course, people then lower their price to sell their product. It happens with shoes, bananas, and automobiles.

Swent: In the textbooks, anyway.

Haldeman: That's right. When we made the agreement with Mr. Frei, the price of copper was around 35 cents. By the time the legislation came out, the price of copper was over 50 cents. It started to go up to 60 and 70 cents, and the government said, "No." The politicians got on the bandwagon and said, "Look, when you sold all this to us, and we sent the law to Congress, the price was 30, 35, or 40 cents. The cash flows that you--Anaconda and Kennecott--prepared in your financial departments and showed us to justify the return on our investment and the present value, was based on those prices."

Swent: Thirty-five cents?

Haldeman: I think the highest we were able to get--I told Mr. Milliken, "Why don't we put it up to 50, 60, or 70 cents. The price will never get there, but just in case."

He said, "No, that's not realistic."

The congressmen said, "This is an abuse. The American companies knew the price was going up. They wanted to get this legislation through when it was low, and afterwards, now, they are getting windfall profits. They didn't even expect it, because here are their numbers." How are you going to tell a congressman they're wrong?

The congressmen got to the president, and the president said, "I can't resist the pressure. Why didn't you people put up the higher prices in your cash flows? You didn't think it would? Well, I've got a Congress now, and I can't just tell them to go to heck, because I don't control it." That was in '69 or so.

The minister of mines, Mr. Alejandro Hales, was encharged to talk to the copper companies. He talked to Anaconda and said, "I have a problem, and I don't know what to do."

Anaconda said, "A deal is a deal. We struck this deal, and we're putting a lot of money in here. Both parties have to respect their commitments." But politics--well, they didn't care. Mr. Parkinson said, "No, absolutely no way. I just won't listen to it."

Mr. Hales called me (and I'll tell you later on the story of his offering me a cup of Turkish coffee). I had alerted New York; they were perfectly aware of what was happening. I told Mr. Michaelson, "Mike, you have to face facts. This is a bonanza time here, and we can't convince anybody out there that we didn't know that was happening. Even the numbers that are on our papers show that we never thought it would go above 45 cents." That was the highest Mr. Milliken would allow us to put in. The historical prices of copper were never that high before. I think they hit 50 cents in 1955, and he said that would never happen again. I said, "Mike, we've got to do something. I hear floating around that up to a certain price they respect, and beyond that price it would be an escalating thing. If it goes another 5 cents up, the government will get 20 percent of the overprice; if it goes up 10 cents, they will get 30 percent; and so on." I don't remember the actual numbers, but when it was double the price, they would get half of the overprice. We would still get more than we ever expected.

Kennecott Rolls with the Political Punches

Haldeman: Mike talked it over with Kennecott. This time Kennecott's board became quite flexible and understanding. They tried to roll a little bit with the punches and listen to the people on the scene. When the minister called me in and told me about this scheme they had, I said, "Mr. Minister, I don't agree at all with what you are saying, but I can understand why the president requires it." I guess it was three or four days after that that I went over for a meeting with the minister, and I said, "Mr. Minister, as long as you can swear on a Bible that you're not going to tinker with it again, I'll accept."

Anaconda just blew.

Anaconda Company's Different Stand

[Interview 2: November 11, 1993] ##

Haldeman: Mr. Parkinson was absolutely furious. He came to Chile in person and went to talk to the minister and the president. He said he was absolutely disgusted with the way they were being treated in Chile, and as far as he was concerned, if the Chilean government offered him a fair price, he would sell out. The government said, "We'll negotiate and buy you out."

Swent: This was long before nationalization?

Haldeman: Yes, this was '69 or '70. They sat down and struck some sort of a deal that over the ten or fifteen years that Chile would start buying out the equity in the mine. I vaguely recall that Anaconda stock took a horrible drubbing. They had no reason to sell out, but that's the kind of deal they made. Anaconda, selling out of the place, had nothing else left in the rest of the world in mining that made them any money. It just didn't make any sense.

Anaconda took an entirely different stand against the country and wanted to bail out. We just went along with the political current. Otherwise Congress would have legislated regardless, and probably would have overridden a presidential veto with a slap through law. We assumed we would have another six years--another presidential term--so why force a law: [instead,] negotiate on something that might be better. Congress could have come out with something 100 percent of the overprice, such as "everything over 40 cents is all mine."

Well, it only lasted a while. Mr. Allende came in. But those are things that happened.

Swent: Hard decisions to make, weren't they?

Haldeman: Some were decisions that you really couldn't fight against, because they were political decisions. Decisions rest in the hands of people that neither the president, ourselves, or the ministers could control. So why not go along with it, and get something you can live with meanwhile. Then, of course, Allende was thumping the drum, and this was horrible. "The government sold out; they should have taken all the copper." That helped his campaign tremendously.

Swent: Why did the copper price take that spike at that time?

Haldeman: In World War II, in the United States the order was to develop all the raw materials that were needed. [James] Boyd was involved with all of that. The copper companies were getting all kinds of franchises, and so was aluminum, steel, chromium, vanadium, and all of the basic materials. The government had a "strategic stockpile" at one moment. After the war was over, we had all these industries that were geared up for the war effort. They had to turn back into consumer markets, and there wasn't enough consumption. We were pumping out copper to feed all of the war machines of three or four nations, and that was more than automobiles and electricity in new homes consume.

So the copper stocks began to build up tremendously. All of the copper companies, along with other companies--aluminum, lead, zinc, and so on--went to the U.S. government and said, "Look, we have a problem. We did what you wanted, and now we have all this excess here. You have to help us handle the situation." Congress devised a "strategic stockpile." The government took the copper out and put it in there, and they stockpiled thousands and thousands of tons. The amount of copper that was in the exchanges that were being dealt back and forth--London Metals Exchange. It wasn't prohibitive.

This yellow line [points]--the difference between the two reflects what the U.S. government had. Everybody out there in the market knew that if they ran short of copper, they could go to the government and ask them to release it out of the stockpile. There was more than the United States consumers could possibly use, and all of the fabricators knew that the government had copper for any contingency. Even if all the mines in the States shut down for six months, they could live on this.

In 1964 and '65, we got a deal with Frei and went to the Congress. About the same time in the States the idea comes up, "Why are we holding these hundreds and hundreds of millions of dollars of this stuff? We're distorting all the markets. Let's get rid of our stockpile." They started auctioning it off. As they auctioned it off, the stocks went down and the price went up. The producers thought that by asking the government, way back in the late forties and early fifties, to take it off their hands, their problem would be solved and the prices would stay high. But the opposite happened, and they had to sleep in their own mess that they made.

Finally this thing got out of the circuit and off the market, and we get back into what we call normal stocks. The thing is that when they got rid of the surplus, at the time the legislation came out, we started to build a plant.

Swent: Economics I.

Haldeman: It's a very simple rule. They call it the law of supply and demand. I always told the Chileans, "That's one law that you can't change, nor can any congress or president change. It's a law of supply and demand, and you have to live with it, whether you like it or not."

Swent: They try to monkey with it, but--

Haldeman: It just doesn't work. As long as it's on the market, the market reacts to it.

Life in Sarasota, Florida, 1971-1977

Haldeman: That fills in the years '69 and '70. That brings us up to the point where I leave Kennecott and go to Florida. The reason I mentioned Anaconda selling Africana, where I worked and found the ore body and the extension, is because that's going to come back into my life again.

Swent: Yes, it really becomes important later.

Haldeman: My wife and I went to Sarasota, Florida, and we found a very nice house and some other Americans who had worked in Chile. Ed Peterson, with Bethlehem Steel, left the steel company in the States. He bought a house two blocks from us, and some friends from the foreign service were there; so we had an old Chile hands group around us, and it was very nice. I didn't work. I took University of California Extension courses in mathematics of finance, number one and number two, for credits and took a psychology course. I enjoyed it; it kept my mind working.

Swent: Did you paint?

Haldeman: I painted and played golf. As I told you, my wife had had a bout with cancer, and she was slowly losing to the disease. We were playing eighteen holes of golf, then with a cart, then nine holes, then with a cart, then par-three courses, and then she would watch from the driving range. We passed '71 to '77 in Florida.

Pinochet came into office on the eleventh of September of '73, and Allende committed suicide--which is documented. Many people on the left in the United States don't want to believe it. The government started to return some properties that were confiscated or expropriated, one of which was this little company, La Africana, that went back into the hands of the Chileans.

The Sagasca Copper Mine

Haldeman: There was another small mine that was brought onstream. It started at the end of Frei's regime and was up in the north--the Sagasca copper mine. It was 60 percent-owned by Continental Copper and Steel Industries in New York, a small manufacturing company that made specialty steel products and also had some wire and cable plants. Being a small outfit, they were always the ones who were short of copper when there was a scarcity of copper. The president of the company got fed up with it and decided he wanted to have his own copper source, his own mine.

He sent one of his men out scrounging around. Chile was a copper country, and he found this property and picked it up. He got 60 percent controlling interest; Codelco Copper Corporation had 5 percent; and the Japanese, Mitsui, had the rest, because that was a time when Japan was starting to consume copper like crazy.

It was an oxide mine, leached, open pit. You would crush the ore, put it in vats, spray acid water over it, and the copper would go into solution. Then a process by precipitation. They'd put scrap iron in big tanks, pour the copper water solution in, mix it around, and the copper replaced the iron. So you got a copper precipitate, about 70 percent. That is sent to smelters, put in the convertor, and smelted.

Swent: This was all fairly new technology at that time?

Haldeman: No, the oxide ores, leaching by acid, were known back in *De Re Metállica* [mining text by Agricola; 1500] time. That's no state-of-the-art of recent years; it happened all over years and years ago.

They had started construction at the mine just at the end of Frei, and Allende came in. They built the plant, and had nothing but chaos. The government froze exchange rates, and wanted to run them out of business--go into bankruptcy--so they could take it over. They fought to stay alive, and there was no discipline in labor. Well, they just had a horrible time, but were able to bully their way through, and by about the end of '73 started to produce precipitates.

Actually, Allende never took it away, but he made it an ineffective operation, hoping it would go bankrupt. When Pinochet comes in, they turn the property back immediately. Now that manufacturing company in New York wanted to get the thing running again, and who? I knew a fellow who was in Continental

Copper, Tom Kennedy, who handled all of their sales of copper and the like. He was a big, bulky ex-Marine, a black-belt Irishman, 240 pounds. He drank just like a good Irishman, too. [laughs]

He told the president, "I know a guy in Florida who is not doing anything. His name is Bob Haldeman. Let's get him down there." So I had the call and went up to New York. Mortimer Gordon was the name of the president, a Jewish man who must have weighed 350 pounds. He had the most wonderful gift of gab you can imagine, and he was quite a gentleman and quite a businessman. Usually when I went there, I left all of my money at the hotel, because you never quite knew what he might wind up doing; he might sell you a Brooklyn Bridge.

Anyway, he said, "Haldeman, I want you to go down there. Anything you want, but get the thing running." They were only at 50 or 60 percent capacity. They had a rep who represented it down here, a friend of Mr. Gordon. He knew nothing about mining. He was an engineer and came from a concentration camp in Germany--a refugee that Mr. Gordon had brought through the Jewish church and gave this job. He was down there, taking care of this business that was falling apart.

I went to Chile. It took six hours to fly to Iquique from Santiago, and now it takes an hour and a half by jet. A man was waiting for me up there, so we went up to the mine. You just drive up the mountainside, go over across the nitrate fields. It's about an hour-and-a-half drive in the foothills of the Andes. I spent a couple of days up there, talking and looking around. It didn't have any spare parts in the warehouse, and there was no morale whatsoever.

At this time we were in martial law, and there was a general, Forestier, who was head of that first province, or State #1, they called it--the *Primera Provincia del Norte*. They had curfew, and everybody was in bed early at night. They had permission to run the buses--change of shifts for the night--but they had army guards with them.

I went up and talked and talked. Finally I got a big, husky straw boss who was on the leaching pads. He said, "I used to work for you in the mine at El Teniente."

I didn't remember him at all. I said, "How are things going?"

He said, "Awful. We need some spare parts, and we need this and that."

"Yes," I said, "but what about labor here?"

He said, "Well, you know what the government has done?" This was true all through the country. All unions were abolished, but the people were allowed to elect one person to represent them. The government would take a civilian or a military man--usually a civilian--to represent them, and those were the two people who would try to solve labor's small problems and the likes. It was at least a contact between management and the workers. The government had appointed a man (I forget what his name was), a local businessman, a civilian native of Iquique. I think he ran a store.

The straw boss said, "The government appointed this man, and we have our representative."

I said, "Who is he?"

He said, "He's the biggest dyed-in-the-wool communist you can imagine. The guy has been laying low ever since. The government representative is so stupid that he hasn't been able to find it out."

I said, "How many commies or socialists do you have around here?" Before, those were the fellows who were making the trouble--shutting the plant down and all that. They were trouble-makers, and they were usually from the political left.

He said, "You want to know?"

I said, "Yes. I'm going to leave in about an hour, and I want a list." Delighted.

He disappeared, and I got in the truck afterwards. He came up to me with an envelope, and away we went. I went down, and when I got in the hotel, a friend whom I had known from Santiago dropped by the hotel to talk to me. He said, "I would advise you to go over and get a safe-conduct pass from the military headquarters, because you never know. You go up there, and even if you have an American passport--these soldiers are just conscripts, nineteen years old, and they're trigger-happy. They don't speak English, and they have no understanding of everything. You never know when they're going to shoot you down. They might say, 'I told him to stop, and he didn't understand me'. That's their excuse."

I said, "Thank you very much for the tip."

I asked my aide-de-camp to get me a meeting with General Forestier in the morning. He called and said, "Yes, we're expected at 10:30." Fine. He started up from the hotel--a beautiful hotel; they have such wonderful pisco sours there and good seafood. They have a *limón de Pica*--Pica is a little town--that is like a key lime instead of a lemon, and it changes the taste.

Anyway, we started over, and we go about two blocks away from what used to be the mayor's office and now was the military headquarters. There were machine guns set up all along on tripods and soldiers. We went through all of the screening, were patted down, showed our passports. I'm pretending that I don't speak any Spanish whatsoever, and my aide is explaining everything to me. We walked into the building and were frisked again. We went up to the second floor, and everybody had pistols or automatic weapons. There were small tanks at the four corners of this building. Well, you had to at that time. You never knew; it was no-man's land.

I stood there and waited awhile, and all of a sudden, "The general will meet you."

I walked in, and the general was there in shirtsleeves. I said, "General, I'm very delighted to meet you."

He said, "It's nice to meet you. What is your name?"

"Robert Haldeman."

"What do you want?"

I said, "I am working for Continental Copper, and I was sent down to reorganize the mine, because it's a mess up there and the production is way down."

He said, "That's good; that's what I want [pounding the table]. Go on."

I said, "I've been told that it would probably be better if I got a safe-conduct pass. I am told that you are the only man who can give one."

[clap, snap] A captain comes in. "This man wants a safe-conduct pass. [to me] Where's your passport?" I gave him the passport. [to the captain] "Write one out. Give him a safe conduct. [to me] What are you doing? What is your title?"

I said, "*Consultor*" (consultant).

"What else?"

"That's all."

"I'm not going to give a safe conduct to a *consultor*. Put '*consultor internacional de minería*' (international mining consultant). Does that sound important enough?"

I said, "General, that's wonderful." [laughter] A very nice chap, serious as he could be.

He said, "What else?"

I said, "I have another problem." Usually when I have one problem, I have a second one. [laughs]

"What is that?"

I said, "You're still full of communists and UP's"--that was the *Unidad Popular*. "You're full of *upelientos* [slang for UP's]. In fact, your representative," and I gave his name, "is dealing with the labor representative, who is an underground communist, and everybody knows he is."

[clap, snap] He calls Major So-and-So. The major comes in with a red beret on; that's a special operation--intelligence or something like that. "This guy has a problem. Do what he wants, give him what he wants, and do it immediately. [to me] Is that all?"

"Yes, General."

He said, "Good luck to you. Anything you need, you let me know. If anybody gets in your way, you tell me."

We walked over to the other room, and I said, "I'm all full of commies."

"The hell you are."

"Yes." Afterwards we became very good friends. We would go down to the beach on a Sunday and have a barbecue and fish stark naked. I said, "Here's my problem," and I went through and told him. I said, "Here's a list of the names."

"Don't worry about it. No problem at all. After a month or two, you come back and talk to me again, because you will probably miss some."

I went back [to the mine] before I went to the States in two weeks, and I saw my big, fat friend. I said, "How are you doing?"

He was smiling all over and said, "Fine."

I said, "Where are your friends on the list?"

He said, "For some reason they have all disappeared." I cleaned the house. From that time on we never had a labor problem at all.

Swent: How did they do it, do you know?

Haldeman: You never ask. They could very well have taken them up, shipped them down south, and dumped them off, saying, "You are not allowed to go from the fifth to the first region at all in the mining district. Do what you want."

Swent: But they vanished?

Haldeman: Yes. Then I took over the mine, and about eight months later we were up to 92 percent production. Everything was clicking. I got some spare parts down--some new tires, bolts and nuts.

About that time the price of copper bottomed out. That was in '74. [looking at chart] The stocks started to build up. Here is when the stocks were real low and the prices were real good. They got rid of the strategic stockpile, and the price started to go up. The mine started to go back to work, and the price went down. That poor little company, Sagasca, a few years later went bankrupt.

Swent: That was too bad.

Haldeman: That's another point for Lady Fate, because that comes back in my life again.

About that time I had suggested to Mr. Gordon that the other divisions of his company that didn't have anything to do with mining were making money and paying taxes, and it might behoove him to take a hard look--I gave him a financial study, my Mathematics of Finance (I brushed up on that when I was in Florida)--at taking a tax loss. He could sell the company and take a tax loss and come out money ahead on his whole corporate thing, because he wouldn't pay any taxes for two or three years on the rest of his operations that were making money. That would mean he would have to go the board and say, "I made a mistake. I shouldn't have gotten into the copper mining business," so he fired me. [laughter]

Sagasca went bankrupt, he was replaced, and the man who came in took my papers out of the file and sold the mine. That was a lot of fun.

Swent: By now had you moved back and were living in Chile?

Haldeman: No, I was in Florida. I never left Florida; I just came down on assignment. My wife was still alive.

The Departamento de Cobre, the Corporacion Nacional del Cobre de Chile, and CODELCO

Haldeman: In the latter part of '75--no longer with Continental--I got a call from Fernando Léniz, who was one of the first ministers of Pinochet--Minister of Economy. He had just resigned his post and went back to his profession. He had been about two years in a real hard job, and he did fine in getting the economy started to straighten out. He had been requested by the government to take a look at reorganizing the Copper Corporation, CODELCO.

Swent: We haven't really said what CODELCO is, and I think we better clarify that.

Haldeman: If you recall, back in 1955, when Ibáñez had this problem with excess copper, the government took a certain amount of copper away from the companies and said they could get a price by selling it through the Central Bank. But nobody would buy it from them, and they wound up with some 200,000 tons of copper stockpiled in the Chilean government's hands. So Ibáñez called on the U.S.--Uncle Sam--to bail them out. Uncle Sam's representative came down and said, "Fine. Now you have to get out of the copper business and let the companies run themselves. But their tax rates are exorbitant, the exchange rates are preferential and discriminatory, et cetera. We'll take the copper off your hands, but you will have to make a new deal with the companies."

We struck a new deal, in which our tax rates were taken down from 80-some percent down to 50 and 48 percent, with the incentive that if you increased production your tax rate would go down again even lower. At that time, the government said, "We have about eight different agencies that are looking over you individually and separately; we don't have a central source. What we want is a central auditing bureau. We want to call it the *Departmento de Cobre*." That was formed, and they had fiscalizing powers on all aspects of the business, including obtaining import permits through them. They wanted to make sure that you were using to the maximum degree local materials, supplies, and manufactured items, provided they were competitive in cost and quality. Because the tendency with the gringos was to say the heck with it and just buy everything from the U.S.; that way you didn't have to worry or argue with the local companies. But it was a very good thing to help the industry and send more foreign exchange to the government.

They were also controlling and keeping records of the export permits and so on. They were staffed by good people to begin with, and we got along very well with them. But they made us toe the line and made us correct some of the errors of our way. When you have almost a monopoly of action, you tend to abuse privileges, and you have to recognize that we were.

When Allende came in and expropriated the mines, he then changed the name and said, "This is now the *Corporación de Cobre*," not the *Departamento*, and that now owns the four American mines.

Swent: It's funny that he would use such a capitalistic title as "corporation."

Haldeman: You know how history is; it doesn't have any rhyme or reason. Even the socialists today are talking of free-market economies.

The day they changed the name was the day expropriation became law. It's a very classic date, and that's the date they had complete control over the copper. It was a very important political day. They had forty or fifty people in the *Departamento de Cobre*. When Mr. Allende left office, there were over a thousand people in the *Corporación*. Before Allende, if you added up all the mines' payrolls, it might have come up to 14,000. He turned it over with 27,000.

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Swent: As the tape was coming to an end, you said that the *Departamento de Cobre* had one floor of an office building.

Haldeman: Yes. When Allende left his heritage, the *Corporación* had office space in sixteen different buildings. You can imagine the bureaucracy that built up, and the payrolls that were padded.

Oh! Where there was one man for a job before, there were three men, and of course labor efficiency dropped.

So the government knew they had a problem on their hands and wanted to reorganize the thing. In my personal opinion, the government missed a golden opportunity to do what I did, and that was clean the house. All of those fellows that Allende hired stayed on the payroll; the military never cleaned them out. They went undercover and were real nice boys. They never missed a shift, they never talked back to their boss. And those were the fellows who had shut it down before.

We had all those people there, and Mr. Léniz called a friend of his, Carlos Croxatto, a very intelligent engineer. Léniz himself was an engineer and an economist. Léniz called me up. He was in New York and flying down to Chile, and he said, "I want to meet you in the Miami airport."

I was in Sarasota, so I drove down to Miami. We spent a couple of hours while he changed planes, and he said, "Bob, I want you to come down and work for me. We're going to reorganize the Copper Corporation. You're the only guy who knows how it should be, and I have certain ideas on it which coincide with any normal business idea," and we all knew what the hell it was. "How much do you charge?" I told him, and he said, "Come on down. Let me know when you are coming."

IX RETURN TO CHILE

Reorganizing CODELCO

Haldeman: I went down, and I was given a small office in that same original *Departamento de Cobre's* floor. Croxatto was alongside me, and Léniz was in the front office there. We started to work. Well, you can imagine. It was just unbelievable. I still have the papers. This was now '75, and from September '73 to '75, the Copper Corporation had been run by some Chilean engineers who came out of the small mine business but were put in there by request of some friend of theirs through some army man, who said, "Until we can handle this thing, there's a Chilean engineer. We don't want to get a gringo in here." He immediately filled all of the positions that were vacated by Allende's key people with his cronies from the small mining industry, and they were getting more wonderful salaries than they had ever had before, all of the chauffeured cars, and all of the perks of this enormous Communist-Marxist bureaucracy. After a year and a half, they didn't want to lose their jobs.

The three of us got in and started to work, and together we shaped up what it should be. They had a board of directors of twenty-one people, all of them political hacks. We shaped it up to what we thought should be a board of eleven, or maybe even seven. The controlling interest on the board would be appointed by the president; that is, the minister of mines and the minister of finance, which it is today.

We had done the organization, and now we wanted to get the centralized accounting system broken up, because we didn't know what the individual mines' costs were. We had to make profit centers out of them, so we had to make each mine an independent division. They had centralized purchasing, transportation, all of engineering, all of exploration, and all of geology in Santiago. Although they had a general manager at each mine but he was just the same as a general superintendent. When I was a general manager, I had all of those functions and responsibilities. So we would go back to it and delegate, make the men responsible for their own profits. If they couldn't turn a profit, we would shut the mine down.

We shaped it up, and we found that we wound up with something like 700 extra people in the Santiago office. What do we do with them? We were then in the process of developing a possible labor pool and inventing some sort of a name on it to get these people in there and by attrition just let them go--offer them good severance pay, maybe double if they wanted it. If they wanted it, they could leave right away, and if not they could stay on. Just out of boredom, attrition, or old age--whatever it was--and disappear.

There were about 700 people looking at this and saw that they were going to lose their jobs. They all shouldered around their leader, who was running the Copper Corporation, and started a very clever campaign of undercutting the work we were doing, saying that we had an idea of turning it backwards, paying higher salaries. What we wanted to do was pay higher salaries and select very key, very important people, but have a reduced number, because it was full of mediocre hacks. This committee, in particular, inferred that I was going back to these high salaries that the gringos paid before, which was something that should stop, because things had changed, and they had to make a sacrifice for their country, that they were coming out of chaos, and so forth.

Undercut by Opponents

Haldeman: They did a wonderful job. They undercut us completely, until finally they had a showdown in the president's office and he told Mr. Léniz, "I'm not going to do it your way. I'm going to send a general, and he's going to run the thing--run it efficiently, like the army." I went home, Mr. Léniz and Mr. Croxatto continued on their way in private life, and they sent a general in. From that time on, they were replaced by another general and another general, all the way through until Mr. Aylwin came in.

Swent: That was just recently.

Haldeman: Yes. With all due respect to the generals--you can't criticize them; they're very intelligent people--but they're not miners.

They did increase production, they did get funds to invest in and change old worn-down equipment. The numbers show that they did, but it was at a cost that could have perhaps been lower. Today, after Mr. Aylwin took over, they have talked about reorganizing, reducing the staff--talking about exactly what we were talking about.

But by this time the unions have become so strong that they say, "Just fire two men there, and I'll shut it down." And they did shut down Chuquicamata. They buck everything, and the government still doesn't want to take a strike. Now it has become a political issue. The unions are as strong as management, and you can't get the costs down. The payroll is 26,000 people. They said they have gone through a lot of these extraordinary payments of double severance pay and all the rest of the stuff, but the numbers, as you go through them, haven't reduced the payroll more than 3 percent in the last four or five years. Their costs now are higher than all the other foreign-owned mines. It was just in the paper today that their costs are 67 and 68 cents a pound. Escondida has been producing for 28 cents. All of these leaching projects that I'm talking about, using our technology, are coming onstream for 40 cents. This is the biggest copper company in the world, and their costs are going to continue going up.

Swent: Do they still have it all centralized?

Haldeman: Yes.

Swent: So the government is still actually running the mines that they took from Anaconda and Kennecott?

Haldeman: Yes, since 1971.

Swent: They've not privatized those yet?

Haldeman: Absolutely not. The minute you talk about it, politics comes up.

Swent: But they've allowed private companies to come in with new ventures?

Haldeman: Oh, yes, absolutely. Mr. Léniz was one of the few people who started this thing, also Mr. Büchi, the finance minister, came later on. They went out and made a survey of international mining legislation and tax treatments on international mining companies, and drafted legislation so that Chile could become the most competitive in the world in this business. That went through and was enacted as law--by decree, not through a congress--and it was exactly what they wanted; it wasn't watered down. After four or five years, the foreigners watching this legislation found it attractive but were scared to death to come in with a dictator. Of course, the world of communism was so hurt when Mr. Allende, the first democratically-elected communist, was thrown out of office. It hurt world communism, and they poured billions in a campaign to discredit Chile.

But after four, five, or six years, Chile hadn't changed the law, the price of copper had gone down and went up again, and nobody else was competitive; so they started to come back in. The legislation that they drafted those years ago is exactly the same as it is today, and that attracts the investments. When you get some capital in here and then start to over-tax them, that's all you get. If you don't, then they'll come; all the flies will come to the honey. That's the proof in the pudding. That's exactly the way it works. Now Peru and Argentina are starting to legislate, and they will be more competitive in the market than Chile. Chile is going to have to take another look, because the mining companies are looking harder at Peru now.

Swent: So that was your career with CODELCO.

Haldeman: Yes, my short, happy life of Francis Macomber. [laughter]

The Legendary Guggenheim Family

Haldeman: I was still in Florida, doing nothing. In 1976 I got a call from the Guggenheim family in New York. They were the owners of the nitrate company and at one time owned Anaconda and Kennecott. Do you know anything about the Guggenheim history?

Swent: Some, but refresh my memory, please.

Haldeman: They owned Kennecott, and they even owned Anaconda. They owned Chuqui, El Teniente, Braden, and everything. But the family started to split up. They owned Asarco--American Smelting and Refining. They had vertical integration on everything. But it came to a point where they decided that they would rather divest certain pieces of property which were getting a little too big, and they needed cash. They sold Anaconda for $70 million. I saw the check in the Guggenheim office. That was way back in the twenties. Today that would have been a $5 billion sale. One check, signed by Solomon Guggenheim. [laughs]

Their office was one large room with four desks and no partitions. Each brother had a desk. No secretaries around them. A beautiful office at 120 Broadway. Somebody would call one of the brothers, "I've got a deal here."

They would call over to the other desk, "Harry, how does it sound to you?"

The other brother would say, "It doesn't sound too good."

"Sorry, no deal." That's the way they ran their business.

It was maybe in the thirties that some part of the family thought the future of the company was more in nitrate in Chile than it was in copper, so they split. One part of the family took the nitrate, and the other part took the copper. That finally wound up to be Kennecott Copper. Then they sold that, but they were still on the board of Kennecott when I entered the company. It was Harry, I think, who was on the board.

Their manager of the nitrate company for years down here in Chile was John Peeples, a very fine man, one of the deans of the industry. We became very friendly with him. He was much older than I was when I was out at the mine, and he kind of took me under his wing. At that time there was a little bit of sense of feeling between some of the older people at Anaconda and Kennecott and the nitrate. It used to be all one company, and they kind of looked out for one another when things got tough.

The nitrate company was the only one who were able to sell out their business to Mr. Allende. When Mr. Allende first took over he realized that he had a problem of credibility by expropriating copper. He said, "No, no, copper is a political expropriation." So the nitrate people went immediately to him and said, "We would like to get out," and he said, "I want to buy you out, and I'll pay you." They negotiated for about a year, and he paid them cash.

By this time there were only two brothers left, and they were of the second or third generation. The Guggenheim's fortune was almost frittered away, but there was a little bit of money left. Harry Guggenheim was the last, and he was getting along in age. He didn't trust his descendants to run the business. One was a grandson, and the other one was a granddaughter.

Swent: There was Peggy Guggenheim.

Haldeman: This was the generation before. Harry had this money coming in from the nitrate business, so he said, "Look, John, I'm probably going to die sooner or later; I'm getting along in age. I'm going to make you the caretaker of this money. You will have full power to do what you want. I want you to try and keep the family together, and the business. If I put the business in their hands, they're going to fritter it away."

So John Peeples had it. The company was Anglo-Lautaro Nitrate Company. That was an old name. Lautaro is the name of an old Mapuche Indian chief. They formed a company, based in the Bahamas, called Anglo Industries, Inc. Its objective was to diversify, build a small group of companies with relatively interesting rates of return, not in the food business and so on. If they put the money in wisely, they would see if they could get the family fortune growing--at least intact, and hopefully it would grow.

Minerec Corporation

Haldeman: They had two direct relatives and one married to one of the granddaughters; they were the three of the group who were really running the company and reporting to John, and John was the patriarch. One of the first companies they had was something that the brothers had inherited as a subsidiary. It was called Minerec Corporation and made mining chemicals. There's a very interesting history on that. The Guggenheims owned Braden copper mine here. In the Braden copper mine you crushed the ore up, went to float it, and the circuit was acid because of the nature of the rock. All of the known reagents, if you put in frothers to get the bubbles up and float the stuff off, don't work in an acid circuit. If you want to neutralize it, you back into an alkaline circuit, where these xanthates work all over the world, and it would cost more than the copper is worth putting lime in it.

Back in the 1920s they had trouble with the recoveries in Chile, and they hired a young graduate from a German university, Dr. Fischer. They bought him a house with a barn on 79th Street in New York and said, "Here's a blank check, Dr. Fischer. I want you to develop a chemical reagent that will work in an acid circuit." Four years later, Dr. Fischer got a reagent, they took it down, and it worked. It is a xanthogen formate.

That's the only thing that ever worked at El Teniente, and of course they had a captive business. The doctor then wound up with an apartment on Park Avenue, and he broadened the lines to another couple of derivatives in the chemical business. It was a little company that made $3 or $4 million a year without any trouble whatsoever. They had a chemical plant in Baltimore and a testing laboratory in Salt Lake City. Dr. Fischer was now getting along in age.

When they sold the nitrate, Harry Guggenheim wanted to pool all the stuff that was left. There is this little company, Minerec, that belongs to the brothers; it didn't belong to anything that was sold. So Harry said, "We'll put it into this Anglo Ltd. group," and Minerec was the first company they had. Then they turned around and bought a small company that made computer printed circuits out in California. Another one they bought in New Jersey that is the largest worldwide business in packaging jeep repair parts. When you go into a hardware store or an automobile store, and they have these little kits in plastic--a distributor cap, spark plugs. They're all over the world.

The next one they bought was a small oil-well-drilling company in Alaska. They were just starting to drill in this oil field that they had up on the north slope that became so famous twenty years ago. These fellows had what they called a good technique. The temperatures up there were from -10^0 to -50^0, and the chill factor was -80^0. Everything was in modules--the motors, the dormitories, the machine shop--and on sleds or skis. They had a tractor that was air-conditioned, completely encapsulated. They would go up in the middle of nowhere, dragging all of this stuff, and assemble it, hook it all together, and drill. And they started to make money.

Now we come to 1976. Dr. Fischer had been asked if he would step aside in about '74, because he was getting old, and they wanted to have somebody else take over. The second man in the nitrate business, a Britisher, under John Peeples, had married a Chilean lady, and they had a boy (I would prefer not to mention his name, because he sued me once for $3 million for mentioning his name). This boy was a Chilean and a British citizen. He had degrees from the University of London and the United States. He had three degrees: bachelor's, master's, and doctorate in chemistry. He was part of the family, and the Guggenheims had loved his father.

So they said, "This boy has to take over the company," and they put him in there. I guess that was in '74. In '75, this gentleman went into Minerec, and he hired a Chilean as his number-two man, plant engineer.

Swent: Anglo was based in the Bahamas, but its headquarters was here in Chile?

Haldeman: No. It was owned by a Bahama company. In 1976, something happened in New York, I'm not sure what, and the people from the group became aware that their new manager was planning to build a plant to make Minerec in Chile. He was taking over the business, and his chemist found out how you did it. It was a trade secret. He had his Chilean friend that he hired, the engineer, down here with a schoolmate of his, also a Chilean, who had some money. He was from a rich Greek family. They were going to build a plant down here and take the business away from the company. Anglo became furious: "What are we going to do? If we have to fire him, who's going to run the company?"

Peeples said, "I know a fellow who can probably handle it for us. He's not doing anything. He's sitting on his fanny in Florida--Bob Haldeman." So I was called up to New York, to the same building, two floors below where I went in 1941 to Mr. Stannard's office. [laughter] In this Anglo office, where the brothers used to sit, they explained the thing to me. "Bob, would you take it?"

I said, "My wife--."

Running a Chemical Company, 1976-1984

Haldeman: They said, "You can run it by telephone if you want. We want you to go down there and start a lawsuit, sue the guy, and put him in jail."

Swent: I don't understand. He was running the company, and he wanted to move the plant from Baltimore?

Haldeman: With his own money and with his friends--take all the business away.

Swent: He was actually setting up a separate competing company?

Haldeman: Yes. He was working loyally as the head of the company, and all of a sudden he was going to pop up with his own plant down in Chile. It was too expensive to ship it down from Baltimore, so he'd have the business and say, "Goodbye, Mr. Guggenheim." Nice boy.

I came down to Chile again, got some lawyers lined up, and we started a suit against him. Oh, boy. They said, "Well, Bob, now that he's not there, you have to run the company." "I'm not a chemical engineer." "We don't care. You just run the company and keep it together. There are capable people there."

I went over to the library in Sarasota and took out a book on organic chemistry, and started to study. [going to bookcase] I still have the book here. I ran the chemical company from '76 until '84. We got the man in jail. Mr. Pinochet had an awful lot of pressure at that time--other cases of bankruptcy and mismanagement in businesses in '82 or '83. He declared a general amnesty law for violations of a minor degree, one of which was the degree to which we were suing this man. He was ready to be put in jail the next day and walked out, scot free. [laughter]

Swent: What did he sue you for?

Haldeman: He was trying to get lines of credit for the basic chemicals you have to use to ship down to Chile. One of the chemical companies called me up and asked me if I had any information. They wrote a letter to me saying they'd like to have any comments I had about this man. I said, "The facts on the case are that he had a suit filed against him in Chile," and so on.

He had a son who was practicing law in a very prominent law firm in New York. He called his son and said, "Let's sue Bob for libel." They started the suit, and apparently the son started without the full approval of the partners in the law firm.

He didn't win the suit after two years. The ex-manager finally surfaced about four years later in Chile, giving classes in the theory of flotation to the Copper Corporation bosses. Three years ago his father died, and left him a lot of money Don't know what happened to his son, the lawyer.

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Haldeman: It is now 1977, and my wife passed away with cancer. She just couldn't win the battle; it took about six years. At that time I moved up to New York and put the house in Sarasota up for sale. Our youngest boy had come down for the last two years to live with us--with her; I was traveling around a bit and had an apartment in New York at 71st and Madison.

X PUDAHUEL COMPANY, 1977-1992

Haldeman: I got a call on one of my trips down to Chile to meet with Germán Picó, the head of the newspaper, *La Tercera*. He was a businessman who was one of the shareholders in the Pudahuel Company. He wanted me to give an engineering opinion on the status of their company, after the government turned the mine back to the Chilean owners.

Thin-Layer Leaching of Copper Ore

Haldeman: They decided to choose a company based in California, called Holmes & Narver, who had a process that they developed called thin-layer leaching, reportedly developed in a small leaching plant near Death Valley in California. This was supposed to give very excellent results. From that you went into what was then becoming the new state of the art, called solvent extraction and electro-winning. Ranchers [Exploration and Development Company] was the first solvent extraction-electro-winning plant in copper. The solvent extraction-electro-winning technology was developed in the uranium business.

Swent: It was developed by Wayne Hazen, and I just finished interviewing him about this.[1] He worked with Ranchers and Maxie Anderson and developed this process.

Haldeman: That's right. This Chilean group decided that was going to be the process, and they arranged a turnkey contract with Holmes and Narver and started up. The manager of the group was a very close friend of Mr. Vial, and as things went along he was more prone to do what Mr. Vial wanted than what Mr. Cruzat wanted. The other minority shareholders were kind of going in between, and a great deal of enmity was built up. That started in-house fighting, and where the job had been estimated to cost $X million, about every three months the manager would come back and say, "Well, it's going to cost $Y million more."

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[1] Wayne Hazen, Plutonium Technology Applied to Mineral Processing; Solvent Extraction; Building Hazen Research; 1940-1943, Regional Oral History Office, University of California, Berkeley, 1995.

They were testing out the process of making cathodes in a little experimental plant. This type of leaching, thin-layer leaching, had never operated anyplace in the world. It finally got to a point where the Cruzat group put their foot down and said, "Look, I'm not putting up any more money until I know exactly why the costs are going up and how much it's going to cost." Holmes and Narver said they weren't quite sure, and the manager, who was reporting to Vial, said, "I'm not going to listen to them."

It wound up where Mr. Cruzat shut it down. None of the other partners, who were the other 20 percent of the shareholders, put up any money, so it was shut down for two years and went into arbitration. That partnership, like all partnerships, had arbitration clauses, because there was no majority shareholder.

Swent: They actually shut down the mine, you mean?

Haldeman: They shut down the construction. They had already spent something like $14 million, including the purchase of the property.

Swent: Where was the property?

Haldeman: You go by the airport and follow out to the beach. From the airport to the mine is maybe seven kilometers.

Swent: Not up in the mountains, then?

Haldeman: No, it's very close. It's one of the best places in the world to have a mine. You're twenty-five minutes from Santiago.

Swent: It couldn't be better.

Haldeman: That's the kind of mine to work for. [laughter]

Swent: But it hadn't even operated?

Haldeman: No, they had just scraped off the ground and started to excavate some holes. They had some machinery in a provisional warehouse out at the plant, and the engineering office was set up. There were a lot of commitments made on money, and then it was shut down.

A leading barrister took over the arbitration, and he couldn't get an agreement with anybody. It was absolutely impossible. In the discussions, one of their lawyers said, "Look, why don't we try and find out exactly how much this plan is going to cost and, furthermore, if this process is going to work. We're going to commit more money on it, and now I'm questioning whether it's viable. Who are we going to get?"

The minute they started to talk about an engineer or a professional in Chile, one guy liked him, and the other guy didn't. If one fellow liked him, the other fellow knew he was going to get the short end of it. So the lawyer said, "Remember Bob Haldeman?"

"Sure. He was on our board before we bought the company. He was one of our directors."

"Well, he's not doing anything; he's in Florida."

Swent: What were you director of?

Haldeman: The Pudahuel Company, back in '69 when they bought it from Anaconda--the Africana Mine--while I still ran El Teniente Mine.

I got a call, and on my next trip down there they wanted to talk to me. Mr. Germán Picó called me over, and I went. He explained the situation to me--that they wanted me to take a look at it to see how much it was going to cost and if the process would work, because now they had doubts about it. At this time they had spent something like $26 million and had nothing to show for it.

Swent: So you were the neutral party.

Haldeman: I took the papers and looked at the thing, and I went out and talked to the people. During these two years of shutdown, during the arbitration, they named a three-man committee to be a watchdog to look over the assets and control all expenditures. They were "ministers of faith" to keep all of the things intact. One was Mr. Silvester, whom I mentioned before, and then there was another Chilean engineer and a Chilean financial man. Of course, everyone was mad at the other person. They had an office two blocks down the street from where I live now.

Testing the Process; Esteban Domic, Carlos Lasserre, Jorge Ready

Haldeman: I felt I just couldn't rely on these fellows to tell me exactly what I wanted to know. There was a young Chilean metallurgist, Mr. Esteban Domic, a very, very intelligent boy. I sat down with him, and I asked him what they were testing--if they were testing the recovery of the leaching process. He said, "No, we're testing what kind of quality of cathodes we can make. We have an electro winning plant."

I said, "Have you tested what it's going to be?"

"No, we just have the report of the study that was made in Death Valley."

"Where's the report?"

"Nobody can find it."

I said, "So you have a contract based on this?" Oh, dear. "For example, I want to run a test. These pads are supposed to be three meters deep?"

"Yes."

"How are they supposed to be stacked?"

"By a certain way."

"By a front-end payloader?"

"Yes."

"Okay. Then they're supposed to be leached for how long?" He gave me all the specifications of this big plant. I said, "I want a module that would be one two-hundredth the size, with a front-end loader, the same height, and so forth. How long would it take you, and how much would it cost to do it? And how long would you have to run the tests? Then take that same liquid, put it in, and see if you can get a cathode of quality out of it."

Swent: Sort of a pilot plant?

Haldeman: Yes, but a full-scale pilot plant. It was scaled up, and you wouldn't have to go up in height or width or anything.

He said, "It's going to cost money."

I said, "That wasn't my question."

I called Mr. Carlos Lasserre, who used to be in the engineering department in Braden and also in El Teniente, maybe fifth- or sixth-line. I had known him for many years. He was an excellent engineer and ingenious as could be. Another fellow I called was Jorge Ready. This kid was a whiz at costing projects, and Mr. Lasserre was a whiz at mechanics and engineering--because this was a mechanical machine operation. You didn't have to crush or grind the ore; you just set it out there, and all of the machines that serve the system--. He was an excellent engineer, and I could trust him.

I called the two of them in, and I said, "I want the two of you to estimate what it's going to cost." Holmes & Narver had about four expatriate people down here with their families, drawing full pay, overseas premium, houses, cars, educational allowances, and all of this was running up to about $100 thousand a month. I told these two men, "I'm going back to the States, and I want you two guys (Domic and Ready) to call me up at the end of the week with the numbers on this thing."

Domic said he couldn't, but I said, "I don't care; I just want the numbers on it. If you can't, find somebody who can do it for me."

He said, "I'll do it."

I got the call, and he said, "We can do it. It's going to take me four or five months to make the tests."

I asked what reliability he would have that the thing would work, and he said, "Over 90 percent."

I said, "Do you put your professional reputation on the tests?"

He said, "Let me go over the numbers again." [laughter]

Ready came up, and he said, "Bob, I can get it up to $50 million, and beyond that not even Holmes & Narver knows."

I said, "All right, how much do *you* think it will cost? You just estimate it for me and call me back."

I then went and talked to Mr. Picó. I said, "Germán, this is the way it sets up. I will run this thing. I will need five or six months, and I have to have full authority; I can't consult with you. I have an estimate that it's going to cost so much to test, and we have to run it like this and this and this. We estimate it's going to cost, say, $65 million, plus or minus 10 percent. That's our estimate, and Holmes & Narver doesn't know. If you want me to go ahead--."

He said, "It's yours. When you're ready, you call the whole board together and tell us exactly your findings."

I got the guys together at my mother-in-law's place (that was December, and I had married again). It was a downtown apartment, and we all sat around her dining room table. I told them we were going to do this, this, and that. As far as money is concerned, I called up one of the three overseers (one of the three horsemen of the apocalypse). "Mr. Domic and Mr. Ready are authorized to spend the money they need, and you have to give them whatever money they ask for immediately. I want you to put down what you pay to them from you, and I will ask them for an accounting. If you don't believe I have the authority, you call up Mr. Germán Picó. Any questions?"

"No, sir." Bingo.

So I left. Then I get a call in two months from Mr. Domic. He said, "Mr. Haldeman?"

"Yes."

"It doesn't work."

"Why?"

"The acid builds up; it just chokes itself on acid."

I said, "Well, get it to work and call me back."

"Yes, sir."

I called up Ready, and he said, "I'm doing fine. Leave me alone. Carlos and I are working on it."

I got another call from Mr. Domic, "I got it to work, but it shut down on me again."

"Now what happened?"

"Leach waters are channeling because of the fines."

Three times he told me it wasn't working. I said, "Don't tell me it doesn't work. Call me up and tell me when you have it working, after you solve the problem. Don't call me otherwise."

About four months later I was coming down for this Minerec thing, and I went over to see the boys. They had the plant working, and sure enough there were big errors in the design: you couldn't work the articulated trucks on a concrete floor in an acid solution, because the concrete started to eat out. This was engineering design in California of something that had never worked before. They put resin coating on it and then took the articulation trucks with one-quarter-inch gravel going this way [demonstrates] on it. They even had some part of the concrete forms with an intricate design for water overflows so that when you put the concrete into it, it wouldn't reach and fill up the rest of the form. The engineering looked wonderful on a piece of paper.

I called the owners together, and I said, "Gentlemen, this is it. I think the process will work," and we estimated so many millions of dollars.

Authorization to Build the Plant, July 14, 1978

Haldeman: They said, "The mediator (barrister) has authorized us to offer you the job to build the plant."

"And on what conditions?"

"You are absolutely responsible, with full authority, and we will provide the monies, plus or minus so much. That's fine with us, and we'll get the financing."

The arbitrator also told them, "You offer it to Haldeman, and if he takes it, then all of you have to resign from the board. The new board will have to be three from each owner; there will be three of Cruzat's group and three of Vial's group. You two have to buy out all the rest of the shareholders, and you will each have exactly 50-50. Two of you, one from each side, will be an executive committee, and you will then call Haldeman and name him general manager, give him full responsibility, and leave him alone." They all accepted it.

I said, "But I'm running a chemical company, and I have an apartment in New York, and so on." They said they didn't care. I said, "I'd like to hire my own people, and I have to fire all of your people." That was perfectly all right.

On French Independence day, Bastille Day, July 14, 1978, I was called over to the office where these two executives were, and they had a labor contract for me. I had told them that I wanted Mr. Carlos Lasserre as general manager. One of the three "boys" of the old school got word to one of these two fellows--this chap here--

Swent: Mr. Cruzat.

Haldeman: --that Mr. Lasserre wasn't really a reliable man and had been kicked out of the steel company years ago. I told them that if they wanted to talk to him, that was fine and I would bring Mr. Lasserre over. I had plane tickets out that night to go back to the States. At five in the afternoon I got over there, and they said, "Bob, it's all fine and dandy," and so on.

I could sense that something was wrong, and finally one of them said, "We're not too sure about Mr. Lasserre, because we heard this story."

I pretty well knew where it came from, and I said, "All right. You know Mr. Juan Zapata, the head of the steel company?"

"Yes."

"Do you take his word as regards Mr. Lasserre?"

"Yes."

I said, "Get him on the telephone."

We called him up at his home, and his wife said he couldn't answer the phone. Why? He had a cold. I told her, "This is Bob Haldeman, and you tell your husband that, much as I love him, I have to talk to him. It's very important."

[He came on the phone and said in a very hoarse voice] "Hello."

I said, "I have a problem," and I explained it to him. "I want you to give your opinion. Don't you tell me what it is. I offered the job of general manager to build a plant out there to Mr. Carlos Lasserre. I'm going to pass the phone to this fellow and later on to the other fellow, and I want you to give them your honest opinion."

Swent: This was the man who had fired Lasserre?

Haldeman: No. Nobody had fired him; it was just a rumor that they had put out.

One listened to him and looked at me, then passed the phone to the other, and he looked at me. They hung up the phone and said, "Why don't you have Mr. Lasserre come in. We want to know him." [laughs]

Lasserre walked in, and they said, "How are you," and so on.

I said, "Fine. I'm hiring Mr. Lasserre at a certain salary."

They said, "That's fine, because you have full authority."

I left the office with Lasserre and said to him, "I want to let you know that I'm leaving tonight."

Charlie [Lasserre] said, "You're going tonight?"

I said, "Yes. I'll call up the office and tell them that you are appointed general manager. You go over tomorrow and take over. If anybody gets in your way, you fire him."

Well, oh, dear! [laughs]

From that time on, we took over. I sent all but one of the Holmes & Narver men back to the States, and we took over all the engineering. I told them to stop the contract with them, and if they wanted to sue me to go right ahead.

We built the plant in one month less than we said we would for about 5 percent less than we said we would. That was quite an experience.

Now I've rambled all over.

Swent: Did you use the thin-layer leaching?

Haldeman: Yes. We started up the construction of the plant and built it. We continued the testing in this pilot plant.

Solvent Extraction and Electro-Winning

Swent: What was the plant?

Haldeman: What is the operation like? You mine the ore and take it into a crushing plant and get it down to about one-quarter-inch size. Then you just stack it in pads that might contain one day's production--three meters high, all leveled out, on a concrete pad. Then you spray acid water onto it. First of all, you run it through a drum as it comes and put concentrated acid on it, with a little bit of water, and it become tacky. It goes out, and you stack that up. On top of that you start to spray weak acid solutions, like you water your garden. The water comes down and starts to leach out the copper, the copper water turns blue at the bottom, and then you recycle it and enrich it. When it's rich enough, it's one of these counter-current things where you always take the leach solutions and enrich them.

When it's strong enough in concentration, you send it over to this solvent extraction and electro winning plant. You put in a dummy anode and a cathode--you make your own cathodes out of copper sheets. Then you package them all up, and you get those little cathodes like that. [Indicates a framed miniature cathode on the wall.]

Swent: Pure copper when you're through.

Haldeman: That comes out electrolytic copper. Electro winning copper is the highest-quality copper that is produced in refineries. Except for one occasion, we met all of the London Metal Exchange and all of the SMTE quality control as far as purity and the likes. We have a premium on our copper in European markets today.

Swent: That's wonderful. When you say you built the plant, you mean the whole thing from the beginning of the project to the end--to shipping off the cathodes?

Haldeman: Yes. We started from scratch, when it was just an empty lot. This ore body is very unique. It's shaped like a sweet potato, very irregular, round-shaped, lumpy. There are maybe twelve to fourteen million tons of ore in it. You mine it from the top to the bottom. In the top part 80 percent of the copper minerals are oxide, which are immediately leachable with acid. The other 20 percent are sulfides, which are of chalcocite, covellite, and bornite. These copper minerals are soluble to a certain degree in acid, and represent 15 or 18 percent of all the occurrences of copper in the world.

The majority--call it 80 percent--of copper occurs as chalcopyrite, and that is almost absolutely refractory to acid leach. The way you can get that out is to crush it up, grind it, float it, get a concentrate, smelt it, and then refine the copper. That's a very capital-intensive route and very costly, and nowadays you're a naughty boy for polluting.

The capital investment in one of these plants, using this leaching, solvent extraction-electro-winning, runs in capital costs 60 to 70 percent of what a plant would cost to go through to concentrate and refined copper. The production cost differential in favor of this new process is anywhere from fifteen to twenty-five cents less a pound of fine copper, and it is absolutely ecologically clean. So it has a lot of advantages. But only a minor occurrence of the copper minerals in the earth are amenable to this.

The Sagasca Mine Again, 1980

Haldeman: Getting along with the story, we are coming up to 1980, and the plant is just going onstream. My old Sagasca mine comes out of bankruptcy and is offered on the market, open bidding. My owners at this time were booming financial groups, getting a lot of companies under their control, and money was all over the place. We had an enormous economy (which turned out to be a house of paper cards). Anyway, they bid and got the Sagasca mine; so now we had two copper mines, and I was back to where I was before in 1975 and had to restructure that company.

Now we started to use a little bit of our technology of leaching, applying it to the leaching up north. It had taken several years in developing it, but now we had improved the recovery problems appreciably, because we had taken out the vats and had gone into these flat pads and the likes. Vats had their use and had been very beneficial.

Director of Ranchers Exploration and Development Company, 1977-1984

Haldeman: In 1977 I got a call from Maxie Anderson. He wanted to see me in Albuquerque. I went over and was interviewed by him, and he asked me if I would be interested in joining the board. I told him I would be delighted, so I got onto the board of Ranchers. I was there until Ranchers was bought by Hecla in 1984.

Swent: How did Maxie hear about you?

Haldeman: I've never been sure. I don't know whether it was through Ed Tittman, who was an old South American hand of Southern Peru mining. I think it was probably Ed. There was another fellow, who was the manager of all mining operations for Mr. Anderson. That was Paul Matthews, and he used to work at Braden under me.

Swent: He was also one of the people who came to Grants, New Mexico. Anyway, your reputation got around.

Haldeman: I joined the board and enjoyed it very, very much.

Swent: You were basically residing in New York at this time?

Haldeman: Yes.

Swent: You had married Blanca, and she had moved up there?

Haldeman: Yes, at the end of 1977. We lived in New York until the end of '79. About that time, Anglo Limited, owner of Minerec Corporation, decided that the oil drilling business on the North Slope [of Alaska] was--

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Haldeman: It was so much more profitable than Minerec, Jeep auto parts, and all the rest of that, that they wanted to integrate and get an oil-well pipe company and the rest. Of course, oil was in a big boom then, and the oil-well drilling companies were making fabulous profits.

Helping Anglo Limited to Sell Minerec to Essex, 1979

Haldeman: They asked me to help them sell it. I guess it was about 1981 that I was able to finalize a deal with Essex Industrial Chemicals of New Jersey who were all inorganic chemicals, and they wanted to get in a small way into the organic chemical business, which Minerec was. Not in the reagents, in particular, but Minerec had a lot of technology in xanthates and chloroformates, and the derivatives of those go into many things like flame retardant clothing for babies, foam rubber, and isocyanates used in a lot of the chemical industry.

I left that company, but Essex kept me on as a consultant. We still had some business running around down here, and I stayed with them as a consultant until 1984, about the same time that Ranchers was sold.

Lo Aguirre Mine, 1980

Haldeman: At the end of 1980 we started up the Lo Aguirre operations. I guess it was in '79 that we were getting into a bit more the testing of this process. I suddenly became very concerned about the complexity of the ore body, because we were going into a different type of minerals, and the test had been made principally on the oxide ores. Sulfide recovery just came automatically as an occurrence, but that was something we were going to end up with. Eighty percent of the ore would be sulfide at the end of its life, and halfway through it would be fifty-fifty. Are we absolutely sure we're going to get the same recoveries in that type of ore?

Swent: This is what always seems to happen, isn't it? You start with oxides, then you get into sulfides, and the sulfides are harder to deal with.

Haldeman: That's right. Up to now most everybody in the industry was floating sulfides. There was another process called leach precipitation float--LPF. That became the novel thing. If you have a mixed ore body, you mine it out, and when the ore becomes all mixed up--oxides and sulfides--you leach it. Then you precipitate the waters and take the residue from the leaching pads, grind it finer, and float it.

Investigaciones y Desarrollo; Applied Research and Development

Haldeman: Well, that idea held on for a while, but it never really prospered. It occurred to me that we should be doing some more research work into our future metallurgy. About this time in 1980, I created what we call a research and development group, *Investigaciones y Desarrollo*. This was on the basis of applied research and development. It has to have some economic advantage at the end; it was not pure research and development. They are two different things. In pure research and development, you go into genes, and it's just a never-never land. But this had to have an application that would be profitable for the company and be able to sustain an efficient operation.

Mr. Domic was head metallurgist, and I told him to form a staff. We started with about five chemists we picked up around the country.

Swent: Did you start this as a division of the company?

Haldeman: Not a division, but something coming under the general manager.

Swent: It wasn't a separate company?

Haldeman: No. It was a separate group, though. Furthermore, that group was also assigned as their primary responsibility to test ores that the mine was going to be mining a week from now, a month from now, three months from now, as they became exposed on the banks of the open pit as we were opening it up. They had to be able to predict as well as possible the type of metallurgy or if the ores had to be blended to be fed in to get the best metallurgy. Apart from that, they were to find out if we were going to be able to get these recoveries out of the sulfides; and I had great doubts about it. We weren't getting too good recoveries on the small amounts that were there.

Mr. Domic was a very intelligent man, but he had a problem with his ego and his own importance. My board of directors thought he was a super *sabio* who knew everything, and nobody else knew as much as he did. He had a wonderful way of presenting the fact that he knew more than anybody else did. [laughs] It made him feel like he was a little god and perhaps a little bit better than me. Then we immediately had a personality conflict. I couldn't keep him down. He was so secretive, too, about his work, that at night he would lock up all of his files. He wouldn't let any of his staff see the papers, the results; he'd keep them to himself, protecting his own mystique. He had the Coca Cola, and nobody else knew how to make it.

I knew our time was limited. On a couple of occasions I told the board that I was sorry, but I was going to have to fire this gentleman if he wouldn't toe the line. "If any of you fellows can get to him, fine. If not, I'm going to fire him."

"Oh, please don't do that."

As second to Mr. Domic I was able, through circumstances and not directly, to get Mr. Raúl Montealegre, who came from this government CIMM, the *Centro de Investigaciones Metalúrgicas y Mineras*, which is a research center that the government has.

Swent: Sort of the equivalent of our Bureau of Mines in the research?

Haldeman: No, the Bureau of Mines is much better.

Now we were starting up the plant. The first six months of operation were a nightmare. Oh, dear. Pads flooded over, the water wouldn't filter through the pads, the fines would segregate and go down. Where these articulated front-end loaders would come around, it just didn't work. Mr. Lasserre earlier had engineered, with a mechano set, how not to use these front-end loaders. "Look," he said, "it's going to be the death of us," and he built a bridge crane over all these pads. [indicates aerial photograph of the plan] Here's that bridge crane. Before, these machines were supposed to go in here and scoop out all these; this is one day's production. The ore sits in these little pad-sections. It goes on for six days, you pull it out, and you just keep replacing it.

Swent: It's all done by crane now, instead of front-end loader?

Haldeman: Yes. Actually, if those loaders tried to go in there, they couldn't get in, the mud was so thick. So we have an overhead crane that has buckets. You can pick up here from the crushing plant, the ore goes over here, the acid is added in the drum, taken over, and stacked. When you're finished, it has a bucket line that digs out the waste, puts it on a conveyer, dumps it out on the side into trucks, and they take it out to the dump areas.

That was piecemeal. This was beautiful on the drafting board in California. Everything is "batch," in little pieces like that. We just had a horrible time trying to debug the plant, the mechanics of the flows of the solution, the porosity or the lack of porosity of the pads, and we started to learn how to do this process. By the end of the first year, 80 percent oxides, easy to leach, we were up to 85 percent recovery and very close to design capacity. We settled down, started to take the wrinkles out of the plant, changed some of the design, and it started to become quite efficient.

We would still have troubles where some things happened that we didn't quite understand. We'd have sludge build up in the solvent extraction tanks and the likes. We learned in the practice how you operate it. It is a very, very delicate operation, and it requires a very highly-orchestrated balance of fluids, pH of the solutions, and the controls of everything going through.

Swent: Your weather conditions must be critical, too, aren't they?

Haldeman: No, not necessarily. In this operation we don't have bad weather. All we have is rain.

Swent: Wouldn't rain upset things?

Haldeman: The rain is really not that big a factor. What you take in, in rain, you probably lose in moisture that you take out in the tailings and dump. They're really not tailings that you know as milky mud; this is quarter-inch rock that has just been drained and washed. You just leave it and stack it up there.

When we started up here, all of this was mechanical handling, material handling, and very costly. [referring to aerial photograph] The crane there, the conveyor line there, other trucks, and you have to take it out here and dump it. We now realized that we had to take another look and get our costs down. It started to dawn on the boys out there that if we could leach at three meters, maybe we could go five meters, and maybe we could go even higher.

I gave research and development the authority to build another testing center here. Here we have where we can duplicate a leaching pad from one meter to ten meters high in closed circuit, with a little solvent extraction electro-winning plant, and turn out cathodes. We could monitor the whole thing and duplicate any conditions, any type of pads, different types of ore, and crushing sizes; we didn't know whether half-inch was better than a quarter.

The board didn't know we were using one of these [indicating] pads of a day's production to experiment with. What we had here was an operating company that was a full-scale testing laboratory. You can imagine the latitude the boys had and how much they could learn out of it. Not every company has that. Usually they do it in their little laboratories.

Now we started to make a little breakthrough. Mr. Domic left us (we gave him a dinner), and Mr. Montealegre took over. He is a very brilliant fellow and very practical. He hired a couple more fellows. He said, "Something is happening out here, and we don't know what it is."

"What are you talking about?"

"Well," he said, "all of a sudden, for some reason"--and now we were up to about 35 percent sulfides and 65 percent oxides--"we're starting to get a change in the circuit and the balance and pH and the ferric generation, developing more ferric oxide."

Ferric is an oxidant, and you need that to oxidize the copper mineral to get them into solution. We were even costing out a plant that produces--converts iron pellets or fine iron powder into ferric oxide. You put it in, and in the process of leaching the acid it goes into ferrous. You throw that away; that's the red gunk that you see in the precipitation of iron and so on.

Montealegre said, "We're starting to develop ferric in the circuit, and we don't think we have to spend $3 million for a plant," which was the point in doing it.

"Why?" I asked.

He said, "We don't know yet."

I said, "Well, what do you need?"

"We have everything we need. We just need time."

I said, "Well, hurry up." [laughter]

Research on Bacterial Leaching

Haldeman: There is where we came across the fact that we now suddenly were starting a wonderful farm for cultivating bacteria. It was thiobacillus ferroxidans, the commonly-known bacteria that helps in leaching. It turns ferrous to ferric. They get in and participate in eating up the sulfides. They take the ferrous and convert it into ferric through their digestive tract. The ferric goes out, and it leaches and helps the leaching of the copper sulfide (this is not oxide). They eat that thing up and gobble. At this point, at any stage we estimate that we must have 10^{26} bacteria working in this size of a plant.

They identified it. We got a microbiologist from the university in Chile and hired her. We put her down there and gave her the equipment, and sure enough she spotted them. Then we started to learn how these things work, when they don't work, and why--what kills them and what causes them to procreate. It's much like the fire triangle, where you need combustible material, heat, and oxygen, and you have fire. Take one of the three away, and you don't. Bacteria need pH, oxygen, and temperature. If they get in the parameter of those three, they will be semi-active, active, or hyperactive, depending on the optimum between the three. If you get it too cold, they go to sleep. If you don't get enough oxygen, they will die. If the pH turns alkaline, they'll die.

Where did they come from? I'm told by the leading authorities in the world that these things exist in nature and rock. It's just one of these things where they had gone dormant.

Swent: But nobody had known about them?

Haldeman: Oh, yes, it was a known thing, but nobody had really gone to find out how you develop these things to work for you and with you, or how you actually design the metallurgy on the basis of bacteria assisting rather than artificial oxidants like ferric oxide, manganese, nitrate, chlorine, and others.

Now we were developing a state of art. It was not patentable, because there are patents on the bacteria and so on. But we put a clamp of security on the plant. When people are invited in, they have to sign secrecy agreements. We were developing something extremely efficient. We were leaching these sulfides now on a controlled leach and were able to accelerate in seven or eight days something that used to take twenty-five days or, in the case of bornite, six months. My little boys there knew it, and nobody else did.

Phenomelogical Simulation and Controlled Bacterial Leaching

Haldeman: Then we got a computer boy in to set this all up on computer. They call this a phenomelogical simulation, which is a simulated test of an ore in a computer or even in a small laboratory, like a little pilot plant. Instead of having an enormous column as high and wide as this room, we take small tubes and do the same thing. You simulate the two things.

In the meanwhile we had been testing ores from Quebrada Blanca, Cerro Colorado, Collahuasi, Lince, Carolina de Michilla, Escondida. At this stage of the game Escondida was not an operating mine, but they had a shaft down and were able to get some ores.

Swent: Escondida was not operating?

Haldeman: No, none of these mines when we were testing were operating. We were getting ores out of ore bodies that were being looked at for putting into operation.

Swent: How were you getting them?

Haldeman: At Cerro Colorado I knew the number two man in the company, who used to be with Kennecott in Utah. The property had passed hands, and Cerro Colorado was owned by Rio Algom of Canada. They were in a joint venture with Mitsubishi to open it up and also with Outokumpu. The Outokumpu unions protested putting Finnish money into Chile where there was a dictator, and that fell through.

They had a drift in the mine, cross cuts, and some samples around. I called them up and said, "I'd like to test some of your ores."

"Bob, why don't you leave it alone. We're in litigation and all that stuff."

So I said to my geologist, "You get a truck and take your boys up north to Iquique. Give 5,000 pesos to the *cuidador*, the caretaker, and get in there and get some samples." So he did and brought them back.

Escondida had a shaft down, and they were exploring the ore body and trying to prove up samples. I asked the manager there if I could have some of those samples to test. He said, "Sure, go ahead."

I said, "No cost at all. I'll let you have the results, and if you're interested, we'll run it again. I'll pay for the first test; it won't cost you a penny."

At Quebrada Blanca, the same thing.

Lince the same thing. Lince is owned by Luksic, who is an old miner, a big power. He is a big financial man now. He's bought Anaconda's name. I told him he would probably be able to use our process in his mine, and he said, "That's not a process; you copied that from the cement industry. All you do is run the ore through a big drum. I'm going to pay you money for that? No."

When he started into it, his people said, "Make a contract with Pudahuel," and he did. We got a half a cent a pound royalty from him.

Anyway, we were getting these samples and running them through. We were learning an awful lot. Different types of ore but the same type of minerals that were amenable to leaching--I didn't get any chalcopyrite ores. And oxides--I didn't want to bother with oxides alone, because anybody can leach it with acid. That's not the technology--we had state of the art with bacterial assist. We learned just oodles of information, know-how, and knowledge. We put it on the computer, where we could simulate from ore samples within a week's time and practically come within 90 percent of the final design of the plant.

Swent: Nobody else was doing this at all?

Haldeman: We were doing it, but nobody else really knew how far we were advanced. Our first breakthrough came with Lince, and it was very small. Luksic is a Chilean businessman, a Yugoslav from the north. He now owns the Antofagasta-Bolivia railroad, the Hotel Carrera downtown, and a brewery. But he was a miner from the north, and I got a contract with him, a very small operation.

A Breakthrough at Cerro Colorado Mine

Haldeman: The second breakthrough was with Cerro Colorado, and that's Rio Algom's. After I ran this test where I bribed to get a sample, I sent the results up to my friend. By that time they had settled their beef with their partner who had pulled out, and they were holding the ore body themselves. Ray Ballmer is his name. I called Ray, and I said, "I sent the results you have up there. Are you interested? Have your men give me a sample. You might think I cheated and got a good sample. I'll pay for all the costs."

He said, "All right, Bob, all right. Get off my back. I'll send somebody down."

I said, "I'll have your man come in and watch us, providing he signs the secrecy agreement."

"Okay." The guy came down with the samples, we ran them through, and got the same results.

About this time, Rio Algom decided they had to do something with the property. We had offered them a contract to run a pilot plant, just like I did the first one at Pudahuel--up at site. The ore samples that they took out of the mine--with the little crushing plant that we dismantled here and shipped all the way up to the mine site. There was a little shack with a bunk in it for our people to sit up there twenty-four hours a day on the thing, and their man to watchdog us. They paid for the test, and we gave them all the results on the basis that if the test worked, we had a secrecy agreement that we got a half a cent a pound royalty for the first five years plus a million dollars in cash.

The guy who motivated them to move was the Chilean lawyer down here. I went over to him one day, and I said, "You've got to get these people off the dime. We've got to move. It's the right time to get it going, and our process--and so on."

He said, "You're asking too much money."

I said, "What terms do you want?" I think I was asking for a cent a pound. I had settled with Luksic for a half a cent, and they knew it.

He said, "A half a cent."

I said, "Yes, but that's not enough, because this is a larger thing. I need some cash payment on this."

He said, "How about a million dollars?"

I said, "Fine." He was the president of the local company here. I said, "You write it up and send it. If they accept it, I'll sign it."

That's the way we started. We ran the test, and the test worked out perfect. When their home office found out about it, whssst, away we went.

Success with Quebrada Blanca

Haldeman: We were testing this thing, and here came Cominco of Canada. They sent down a geologist, Mike Clark, a young boy who was born in Peru. His father used to work in Sewell as an engineer in the engineering department. I remembered him. Young Mike came down, and he and my geologist got along quite well. My geologist and I thought, "Why don't we try and sell the idea to Cominco--Quebrada Blanca. They have an option on the property. We'll get Clark, and we'll convince him that it has to be done."

We got Mike, and we started a friendship. We said, "Mike, you get some samples for us the kosher way." They were looking at the Quebrada Blanca, and we lose nothing by testing it. So they started to test. It worked.

I was able to negotiate for the transfer of technology, 5 percent of preferred shares and the option to buy another 10 percent of common shares. The property was in Enami's hands, and Enami received 10 percent of common shares. We have 13.5 percent of the shares, and we paid for 8.5 percent. That, according to their cash figures, at the price of copper that they had forecast over the next fourteen years should yield something like $130 million in dividends for the Pudahuel Company.

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Swent: You've just mentioned a figure that took my breath away. Maybe it didn't do that to you.

Haldeman: According to their cash flow, there would be $130 million in dividends over the next fourteen years for us.

Quebrada Blanca Mine; Temperature Problems

Haldeman: In the development of this thing, we had a problem before we got any deal. That was the temperature involved. All of these operations I'm talking about are usually at reasonably normal temperatures and with normal rates of evaporation. But the Quebrada Blanca project is up at twelve to thirteen thousand feet, and if you want to spray at nighttime, you're going to cover everything with ice. Although this reaction here is exothermic.

Swent: It heats things up?

Haldeman: There is heat generated. But at that altitude, the evaporation rate is much higher; and as you evaporate, you cool. So we came into a problem that was as complex as the bacterial knowledge, and that was the heat balance. Of course, you can't have the thing too cold, because the bacteria would slow down working or hibernate.

Our boys on the computer worked out a heat balance and put it on computer. I asked them one time how many computations they have to make, and they really couldn't tell me. They tied this all in: they got the design of the plant from the engineers at Cominco; they factored in all of the loss of heat through evaporation of fluid--the cooling effect of that; the radiation from the sun during the day and the wind at night. At every transfer point you have extra heat loss. You can't spray;

you have to trickle-leach. Your pipes will freeze up at night, so you have to put a thin cap of rock waste on top.

They designed the whole thing and put it in the computer system. We have the computer programmed so that you can watch the program at the crushing plant, at the transfers to the drum, from the drum to the pads, beyond the pads into the solvent extraction tanks, and the electro-winning tank--all the chemical and the heat balances going through there. We also had to put a weather station up there alongside the testing plant, so we can find the temperatures day and night, every hour, and the wind, the evaporation rate, and chill factors for a year.

A Wonderful Piece of Engineering

Haldeman: We were able to put on the computer a model that showed every day. You started it running, and it would start with January 1. You could see the first, the second, the third, every hour, and you would get all the daytime temperatures and what the temperatures were in the solutions. You could find out when you were getting to the danger point, so then you would have to add heat there. The engineers said it was absolutely fantastic to see it--all done by young Chilean engineers. The Cominco engineers came down and watched it with awe and didn't argue on a thing. Absolutely fantastic. It's a wonderful piece of engineering, chemistry, and computer science that the boys have put together. I'm very proud of them.

Even the banks came down. They had a consortium of seven banks to finance it. They sent metallurgists from I don't know where--all over the world--who sat down through that thing, and they're out selling our "Coca Cola." It was a very high recommendation. These are not just my comments, but of all of the major banking in Europe and in Canada, and some U.S. banks. They said that this process worked.

Now we are up to the point where we were really selling our wares. We sold to Lince, Cerro Colorado, Quebrada Blanca. To date there is over $500 million of investment underway, using our technology, under agreement with us of royalty or share participation.

Swent: This is under the name of Pudahuel?

Haldeman: Yes. I was still in the company in '86 and '87, when we were striking these deals in '88, and when the investment programs started in '89. Way back in '85 or '86, I could see that we were breaking through and would have this technology and could market it. But the biggest field in this business is chalcopyrite.

The Challenge to Leach Chalcopyrite

Swent: Because this kind of ore that you had is relatively rare?

Haldeman: Yes, it's rare, and it's not the biggest market; it's only 15 or 20 percent of the market. It's the easiest to find, because it's closer to the surface. The cost of smelting, oil, pollution costs were going up. Chalcopyrite needed something, so I told Mr. Montealegre way back in '84 and '83, "You've got to get one or two men--I'll give you any guarantee you want, but get them--and put them full time on chalcopyrite." He couldn't get the people. He ran into a problem about '82 or '84, when he wanted to hire somebody and we had limited ore reserves. The closer we got to the end of the ore reserves, which is about '95 or '94, the less desire scientists had to come and join us, unless he could give them some sort of guarantee on what they wanted.

Well, they wanted at least a minimum of three years and three years' severance pay. I said, "Write out the contract so that if the company goes broke, they will get their money first out of the bank." So he was able to hire the people [laughs] and build it up.

About three years ago, he said, "I finally have a couple of the boys working on it full time."

I said, "I don't want to know what you are doing, and don't you tell anybody else in the company. See if you can't develop something patentable." Every month, he, (Mr. Montealegre), Mr. Lasserre, and another engineer, Mr. Kreft, who works in the company (and who used to work for me in Teniente), and I get together at the Oyster House. We have oysters and that white wine you had for lunch, and we exchange information about old times. He's making some very interesting inroads into leaching chalcopyrite. I wouldn't be surprised if he would be one of the first to open the door. Whether it's going to be economical, whether it would be too costly for the oxidants that are required to put into solution, you never know until you try.

Whoever it is, whether it's our Pudahuel or Asarco or Hazen, has Pandora's box. It will break through the industry and rip it wide open. The biggest break in copper that can ever happen to revolutionize the industry is to leach chalcopyrite.

Swent: All these other people are working on it, too?

Haldeman: I don't know who is really working on it. We have an awful lot of pure research on the thing in the States, and you can get papers published and all that rigamarole. But you've got to have something that works, that is practical economically; it has to make a profit. If it doesn't make a profit, it's pure science.

Swent: You're in on the ground floor. You will probably be the one to do it.

Haldeman: Well, I'm not in on it now. So far, the new management is letting Mr. Montealegre alone.

Buying and Selling the Zaldívar Mine

Swent: You're still with them, aren't you?

Haldeman: No, I left the company. Let's go back a little bit. We are coming to '88 or '89, and we're wrapping up all these deals and the company is getting a lot of income. In '89 there is one property named Zaldívar, about five kilometers away from Escondida, the enormous mine. You can see one from the other. It's one of these type of secondary enrichments, which is amenable to leaching. It was in the hands of a couple of Chileans that I have known for years. One of them is a friend of Lasserre, and now is a congressman. That friend talked to Lasserre, and he said, "Why don't you talk to Mr. Haldeman?"

The congressman said, "My partners and I are all shareholders, and we have an agreement with BHP, the owners of Escondida. They took an option on the property a year ago, and then they found all that ore in Escondida and are just leaving us hanging on a yo-yo. We have a word from them that if we can find a buyer, they will turn it over for the money they put into the property in drilling and let us sell it."

So I went over to talk to the fellow. We went in, and he said, "This is a wonderful ore body."

"Do you have a report?" They did have a report, and my geologists looked at it. It was just exactly what we needed in the size of company, about twenty-five million tons of good ore, and then it phased out to 1 percent. It had long life in it, and it was something we could handle with our size and our technology.

During all this period, from '82 to '88, Pudahuel was in Chapter 11, because of the fall in the price of copper. Through all of this thing, now, from '81 to '82, one of my two owners, Mr. Vial, was taken to jail, and my board of directors disappeared. I only had one member out of six show up for a meeting. Three of them were in jail, two of the other three didn't want to show up anyplace, and one of those three left the country. That and the fall in the price of copper here [refers to chart], when we just got into a place where the stocks went up and the price fell down. We just caught the wrong swing.

I had to renegotiate all of the debt structure with the banks, in addition to all of the other creditors, and we were able to do it. We kept the company alive up north on lines of letters of credit. We were up to about $80 million in debt. Now Pudahuel, with the mine here at Lo Aguirre, this year is getting out of debt. The mine up north still has some debts.

In '89 we had an accumulated debt of around $50 million between the two companies.

Swent: Why did your people go to jail?

Haldeman: In their other empire of structures of companies and dummy companies and so on, there was a little bit of shenanigans played in taking assets of one company to the other or liquidating a company when it was just a shell. We didn't have a good SEC down here.

Swent: White collar crime?

Haldeman: Yes, and now they are all out free and are working, building up their empires again. The economy was built more on paper cards than on a real productive basis, and other people got into trouble, too.

Swent: It wasn't political?

Haldeman: No, this was just normal business. We just started up at the wrong time in the price swing, but that's all right. We kept the companies alive. Finally my board of directors came back and started to sit in the sessions after three years. I was running the company for two and a half or three years by myself, and everybody was so pleased that I did. [laughs] I had a lot of fun.

Swent: You must have been nervous though at times.

Haldeman: That's when it's very nice to be able to call up the minister of finance, whom you have known before, and say, "I have to talk to you. I've got a problem." You go over and meet with him, and he will fix it up for you. It works all over the world the same way.

Swent: You probably lost some sleep though.

Haldeman: In '89 the Zaldívar owners got an agreement with Utah Getty, who had the first exploration on the thing (later BHP bought in, and now it's Utah-BHP). They got this agreement that the big boys would sell out for the money they had put in the property--the expense cost. They talked to me, and they gave me a *big* deal about how they had European interests with a lot of deep pockets, that they were willing to pay cash, and that they had an offer on the board. Well, they wouldn't tell me exactly what it was, but they'd be willing to consider a sale to Pudahuel; but it would have to be cash--nothing in shares, because they knew the status of our company in bankruptcy.

"How much do you want?"

They said, "Six million dollars."

I closed the door. "I want you to write it out, because I'm going to take it to a bank and get the money. I need twelve months to test all of these figures that you have given me. If those figures are valid--"

"I can't give you twelve months."

"Give me six months, and I'll give you $200,000 as rent."

"Okay. Write it out."

He wrote it out. I got back to the office and told the board. "Jimminy Christmas, can you do that, Bob? The banks--."

I said, "Let me handle this." We prepared the papers for it, and I asked for a meeting with our two major creditors, Banco de Chile and Banco de Santiago. I sat them down and said, "Gentlemen, this thing is on the market here. I think this is one chance in a lifetime. The property is valid. With this you can be more than enough paid off. This guarantees the payoff of the debts, and I can finance the rest of the money. I have contacts. I was talking to the Cyprus people, and they offered me all of the solvent extraction electro-winning plant that's out at Tucson, Arizona, that the old metallurgist at Anaconda built (I forget what his name was). They have mining equipment up there. And I talked to Phelps Dodge."

I had thrown a couple of lines out, and I had even talked to Outokumpu, the Finns, about this ore body, but they weren't quite sure. The Finns are very funny people. They don't know how to make up their minds, and their decision-making is distributed among several places in the world and among several executives. I can never quite grasp how they work and how they got as far as they did. [laughs]

I walked back to the owners and I said, "You've got a deal. Write up the papers. Where are the titles to the property?"

"Jesus, the titles. We're in a mess."

You couldn't imagine how it was. I had to get the agreement of Utah, and they have an owner's council of all the Australian managers who get together once every three months or so. Everything was against my getting this done in six months. Everything was all snarled up. I waded and fought through this thing, and I finally got to the moment to sign it.

I sat down with the bankers and told them that, and they said, "Okay, if you can do it, we approve the money."

I said, "There's no water, but I have the possibility of buying water rights--one of the springs that feeds into saline lakes. It will take $1 million cash."

The two heads of the banks went over and whispered, and they came back, "Approved."

I went back to the owners and signed an agreement. It took us twenty or thirty days to button it up, and I paid in cash. I got a call from the banks in the following month. I had now made a trip to Arizona and was coming back, looking for financing, partners, and so on. The banks called me over and said, "Bob, we've been talking to your board, and they wanted us to talk to you. We would like to find out just how much this property is worth; say, for you to put it on the market and offer it."

"We don't want to do that. What do you want to do, sell it for $10 million and buy something for $6 million? We can make $100 million off of the thing in profits."

"Well, we'd like to find out."

"Okay."

I went over there, and we worked with the papers. We had to put it up on a formal bid thing. There's a routine that you go through so that it's transparent. Came the day, and I knew three or four companies were going in for it, and Outokumpu showed up. We were standing around, and finally the notary public came in; he has to be there to open the bid offers.

Outokumpu talked to the heads of the banks, "We want ours opened first." The banks said all right, and they opened the thing up: $25 million cash, three months after I bought it.

Swent: What were they buying?

Haldeman: The Zaldívar mine.

Swent: Which you just finished buying?

Haldeman: Yes. The Zaldívar mine, reserves for another fifteen or twenty years.

The banks took it, just as happy as could be. We wrote down our debt. That year both banks had the highest profits they had had for any single year in the past five years and 40 percent of the profits were their proportionate share of the Pudahuel sale. [laughs] And I lost the property.

Swent: You turned around and sold it before you even had a chance to--.

Haldeman: Well, I had to go through it. Too bad. If the company had the property, I would have stayed on and built the mine and had fun with it.

Swent: Did they get the water?

Haldeman: Yes, they got the water. Outokumpu had to restructure, and they almost went broke. So they called Placer Dome. Placer Dome wanted to get into the business, so they paid $100 million for 50 percent of the property. They're building a $600-million operation on my little peanut that I bought for $6 million. I bought it for $6 million plus $1 million and sold it for

$25 million; and they sold 50 percent for $100 million! [bangs the table] I could have done the same bloody thing.

Swent: Are they going to use your technology?

Haldeman: I don't know; I'm out of the business. They're talking about it--part leach, part flotation. They don't know what they want to do.

Comes the end of '90, and I was getting tired. I could see the end of the ore reserves, and I didn't want to fire the people I hired. I had been fifty years in the business, so I just decided I would turn it over to a young fellow I groomed, who is now number two man in Cerro Colorado--Costabal, an excellent fellow who does a wonderful job. He stayed a year.

Swent: This is at Lo Aguirre?

Haldeman: At Pudahuel. In '91 I got a call from Ballmer, the Canadian outfit, Rio Algom, that bought Cerro Colorado. A new manager took over, and they brought him down and presented him. Then I got a call and was asked who I would recommend for manager of that property.

When Ballmer was down talking to me about the property (he came down a couple of times), I said, "Ray, you can't repeat Kennecott's and other foreign companies' mistakes. There are Chileans that you can run the organization with. You can have 100 percent Chilean organization, and it will cost you less, people will stay longer, you won't have the wives bitching about the school system, and they are very fine engineers. I can recommend some to you. Furthermore, if you start the company up, be my guest. Take anybody you want. You're using my process, and I have a second man behind everybody. So I'll give you a free staffing."

Pedro Campino

Haldeman: I got this letter from another part of their organization, asking who I had, as they had a couple of other names. I said, "I'd recommend Pedro Campino." He's one of the boys that I groomed. He was the first general manager of operations back in 1969. About ten years before that, we gave him a scholarship to the University of Utah in Salt Lake City. He graduated in mining engineering and came back to work for us, and we put him up as a manager there. When Allende came in, he went up to the

States, and I was able to get him a job in White Pine Copper. He went up to number two man there. When Allende was out of power down here, he came back to Chile and became number two man at Mantos Blancos and opened up their first underground mine. Then he was hired as assistant general manager at El Teniente, where he worked as the manager of operations. After that, they took him up to Chuqui, and he became the general manager of the largest copper mine in the world.

At that time, '85 to '86--or early eighties--all but one of the general managers in all of Codelco's copper mines were ex-alumni of Braden; we had staffed the entire industry.

They hired Campino, and Pedro called me up and said, "Thank you for the job. Bob, who can I steal from you?"

I said, "Anybody you want."

He said, "Your Costabal?"

I said, "He's the general manager."

He said, "Would you mind if I take him?"

I said, "Be my guest." So he started to staff himself, and he has an all-Chilean organization and is doing fine, as far as I'm concerned, in a great way. The Canadians are just fascinated with the group. He has built up a wonderful team. He has all the best people. He's really doing an excellent job. It will be a showcase.

I turned over the management at the end of '91 and the end of '92. I just lost interest, really. There were too many other things I wanted to do, and I wanted to enjoy my family. So I left the company. I haven't had anything to do with them, and I don't care to. There comes a time when you have just had enough.

This year I was invited to be a member of the board of North Broken Hill Peko Limited, of Melbourne, Australia, who were one of the bidders on the El Abra project. I'm a member of their local board here. Peko is an aborigine word. They're a spinoff branch of North Broken Hill. Years ago North Broken Hill decided they didn't want to have an exploration staff, so they spun it off. They had a leveraged buyout, and those boys have built up a wonderful company.

Swent: Do they meet in Australia or here?

Haldeman: Here. This is their local Chilean board. There's not very much to do yet. They are just coming in and getting their feet wet. I participated in preparing the bid with them for El Abra, but Milt Ward just bought it for Cyprus and Lac.

Swent: He paid a very high price for it, didn't he?

Haldeman: I'm wondering if the price is worth it. Milt has his own reasons. I don't care to be privy to them, because that's his business.

Swent: He's a go-getter.

Haldeman: Yes, but you have to be a profit-maker, too. You can bid your fortune away if you aren't. Just like in gambling.

XI PLEASURES OF RETIREMENT

Swent: We haven't mentioned your painting, except in passing. They pitched out some of your paintings when you left Chile. We should mention that you are a serious painter.

Haldeman: I'm a painter. I don't know how serious I am.

Swent: You devote serious time to it.

Haldeman: Yes, I do. And serious time to my family, my daughter in particular.

Swent: You haven't mentioned her. Do you want to mention her?

Haldeman: Maybe how we had this little girl.

Swent: I think it's interesting. Not everybody your age has a ten-year-old.

Haldeman: I was married in 1944 to a United States girl. We were married until 1977, when she passed away. We had three boys who were born in Sewell, the mining camp, in 1946, '48, and '50. Over the years they have given me up to twelve grandchildren. The eldest boy is in Hawaii, working in a private school in the foreign language department. The second boy was just recently with Dames & Moore in Colorado, and he is freelancing. The third boy is in A. G. Edwards brokerage company, working in Houston.

Swent: They all went to school and college in the States, didn't they?

Haldeman: They all went through grade school here at the British boys' school, Grange, where they had caning--the English system. The students were placed in four groups for interscholastic sports competition, that is light blues, dark blues, light grays, and dark grays--the colors of the school and of their uniforms. My sons were light blues and were called Haldeman 1, 2, or 3 according to age, never by first name. They learned manners which today they have not forgotten.

Swent: And they learned good English.

Haldeman: Yes. Of course, being born here they are completely bilingual. They're all happy; we don't have any problem with the children and grandchildren--no long hair, earrings, or marijuana.

Twelve years ago, in 1981, I had all of my children down--the three boys and their wives, who had never been to Chile, and maybe eight grandchildren at that time. They came down for Christmas and New Year's so that the boys could show their families and their children where they were born, where they went to school, and where they lived.

Swent: You had remarried by then?

Haldeman: I was remarried then to Blanca. We have a house at the beach, Algarrobo, a very nice house. It's only about an hour and forty minutes drive away. It's a house where you can go in winter or summertime. You turn the fireplace on in the winter, and in thirty minutes the house is habitable. It's nothing great, but we have everything we want there. There are beautiful views, there is no noise, and you can sleep like a rock.

Adopting a Chilean Granddaughter

Haldeman: In 1981, my eldest son had four boys. They had always wanted a girl but his wife said, "I'm having no more children. That's the end of it. I can't stand any more men around the house."

My wife, Blanca, talked to my boy's wife, Judy. She said, "Judy, have you ever thought of adopting a little girl? You could adopt a little Chilean girl." She thought about it--

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Swent: They became so enthused that they started to investigate the possibility.

Haldeman: They talked to the social worker in the States and called us back and said, "Blanca, go ahead." To adopt here in the metropolitan area of Santiago is quite difficult. They have the adoption agencies, and, of course, it is to prevent abuse. But Chile is Chile, and there's always a way you can do something legally, and it takes a little less time. You have to know who and where.

Blanca has contacts all over the place. She hired a lawyer. Out in the farm areas it is much easier. He went to a friend down south, also a lady who works in a hospital and another one who knows the head of the child's court. The next thing you know, he told Blanca, "I have something lined up for a little girl," and she took off south.

Two days later Blanca came on the night train with this little girl, who was eighteen days old, in a basket. Her name is Gabriela. According to all the rules and regulations that you have to go through, it takes you three or four months to get the social workers to look at the family without them knowing up there and down here, and all the papers and the like. We had Gabriela in the house, and we had a little *Moisés*, the little basket you put alongside the bed.

Swent: They call it the Moses?

Haldeman: Yes. [laughter] There was one of the first, very famous soap operas on television at the time at around 6:30 in the afternoon. It was about the time the maids were getting dinner, and they all watched it. So I came home and watched the soap opera. I was sitting on the floor with her in my lap, and I gave her the bottle. It was kind of nice to have a little baby like that. My eldest son came down and took her home, and everybody was happy.

Adopting a Daughter, Alicia

Haldeman: One year later, my wife said to me, "*Oye, Gordo*"--she calls me "little fat one, *gordito*"--"did it ever occur to you that we might be able to do the same thing?"

I said, "Sweetheart, I never thought of it once in my life."

So she hired another lawyer, and a week later she went south again. Two or three days after that she came back with this little girl who was twenty-eight days old, Alicia. Now she's ten years old, going on eleven. She's my daughter.

Swent: The light of your life, obviously.

Haldeman: That made twelve grandchildren I have, with the adopted girl in Hawaii now. This little girl, Alicia, has three brothers who are now forty-seven, forty-five, and forty-three years of age, and twelve nephews and nieces. She's an aunt twelve times. [laughter] She is just such a nice little thing.

Swent: She's certainly a pretty child. And a lucky one.

Haldeman: The last little story you wanted to know was how I received my second decoration.

Receiving the Orden al Mérito, Bernardo O'Higgins, Comendador

Swent: We got the story of the first medal but not the second one.

Haldeman: The first medal was in 1957, *Orden al Mérito*, Bernardo O'Higgins, the rank of *Oficial*--official. There are four ranks: *Oficial*, *Caballero*, *Comendador*, and *Gran Cruz*. Comendador is the highest recognition they give to a foreign citizen. Diplomats are given the *Gran Cruz*. I got the *Oficial* in 1957 when I was the vice president of Braden. The government thought I should have some recognition.

Now we come to 1993, the first days of September. I was taking a shower in the morning. My wife called in and said, "Telephone call for you."

I said, "Take the number; I'll call back."

She said, "I'm not taking any numbers from this. This is the minister of mines, and he wants to talk to you."

Oops! I grabbed a towel and wrapped it around me. The secretary said, "Mr. Haldeman?"

"Yes."

"The minister would like to talk to you." This was Mr. Alejandro Hales, the same man who was minister in the last years of Frei's government in '68 to '71, whom I had had conversations with and finally reached an agreement on the overprice of windfall profits of the business, which brought the wrath of Anaconda on us. Now he was back again as the minister.

He came on the telephone, and he said, "Robert, good morning. How are you?" He's a wonderful politician.

"Very fine, Mr. Minister."

He said, "I'm just calling you on the possibility that you might be coming into town today."

I said, "Mr. Minister, I am coming into town today."

"Tell me, would you happen to be in town, say around noon?"

I said, "Mr. Minister, it just so happens I'm coming into town today and will be in town at noon."

He said, "Will it be too much trouble for you to come by my office?"

I said, "Mr. Minister, I will be in your office downtown today at noon."

"Fine, I will wait to see you."

What has happened now? Have I done something wrong? Peck's bad boy again? I can't understand why the minister was calling me. I got down to the secretary's room a little before twelve, and at twelve o'clock the buzzer rang. She goes in and comes out, "The minister will receive you."

I walked in, and Mr. Hales said, "How are you, Robert? Nice to see you again. Come over here and have a seat. Can I offer you some coffee?" He's a Lebanese, and he likes Turkish coffee. It's a custom of these people to have it, and it's really very good coffee.

I said to him, "Mr. Minister, I'd rather not, if you don't mind."

He looked at me with wide-open eyes, and he said, "What's wrong?"

I said, "Minister, twenty-three years ago when I came into your office the last time, you offered me a cup of coffee, and I took it. When I left the office, you had taken away from me part of my price of copper."

He looked at me and said, "I forgot all about that. You're perfectly right. Well, you drink this coffee, because it's not going to cost you a thing." In talking, he finally got around to saying that the government was very proud to tell me that they were going to decorate me with this honor of Bernardo O'Higgins and so on and so on. He sat back and smiled; it was a very nice thing for him to do to me.

I thanked him profusely, said I was eternally grateful, and this and that. "But I have a problem."

"What's your problem?"

I said, "I've already received the medal."

Oh, his face fell open. He clapped his hands, and he said to get him what they call the secretarial administrative officer of the ministry; they call him the *jefe de gabinete*. "Get him in here right away."

The young man came in, and he shouted, "Get the Foreign Office on the phone. What the devil is wrong here? This fellow has already received the award. Don't they know what they're doing over there?"

The young man ran over and grabbed the telephone, dialed, and said, "I've got Mr. Prieto on the line."

He said, "I don't know any Mr. Prieto there. That's not the answer."

He was getting furious, so I said, "Mr. Minister, just a minute. Let me solve your problem. I would be just delighted if you could give me the same decoration but with the rank of *Comendador*."

He stopped, looked at the administrative *jefe de gabinete*, and said, "Tell him it's a *Comendador*."

The fellow talks on the phone, and he says, "Mr. Minister, *Comendador*." [laughter] So that's how I was decorated. It took him completely by surprise that I had already received it. I think I am probably one of the very few, if there are any, who have received the same medal twice in their lifetime.

Swent: Surely the only American.

Haldeman: That's exactly right.

Swent: Are you the only foreigner who has gotten the *Comendador*?

Haldeman: No, there have been several others--Swiss and Germans who have been down south for years and have done a lot for German and Chilean relations and the likes.

Swent: It's a wonderful honor and a beautiful medal.

Haldeman: Oh, yes.

Swent: And now you have two of them, so you're framing them. Are you going to put them on your wall?

Haldeman: That's right. I'm very proud and feel very honored.

Swent: They have a special ceremony when they give them to you?

Haldeman: Yes, the ceremony was held at noon in the Salón Rojo of the Foreign Relations department, which is the ex-congress building in the center of town. There were forty or fifty people present. The head of protocol makes the introductory announcement and passes the word to the minister, who makes a speech and says what is going to happen.

He made a very nice speech about me. He had been filled in by Mr. Simián, who was the best man at my wedding, and he used to be minister of mines, and he used to work together with me in El Teniente company. I was always very friendly with the minister, and it was a very sympathetic speech.

Then the *jefe del protocolo* reads the decree announcement and passes the word to me, and I made my thank-you speech. In my opening part I said, "My Spanish is much like my wife. I know it, but I don't dominate it." [laughter] In Spanish it sounds a little bit nicer. And it's true, both ways. After that there was champagne. We had invited ten couples to this ceremony, and the minister on his own had invited people who had played a role in my past life--the head of the YMCA, the president of Santiago College, where I was the head of the board, the head of the mining engineers' society, and so on down the line. There was a representative from the U.S. ambassador to represent him.

I asked the minister to come over and join us, and we went over to the Union Club, which was about three blocks away. We had a very nice lunch with good Chilean wine, which you enjoyed at lunch the other day.

Building the Santiago YMCA

Swent: You hadn't mentioned the YMCA.

Haldeman: I'm not a Y member, but I guess it was in 1959 or 1960 that a fellow came down, sent from the head of the YMCA. They have these chaps that they send around the world where the Y has fallen into inactivity and doesn't have any building to speak of. They are fellows who get out in the community and try to get what they call ordinary citizens, laymen--*laicos*--to get in and see if they can support it, build up some facilities for it, and shake it up; get it going.

This fellow who came down was Carl Stair, a very nice chap. He could just pester you to death, and he kept after me. His family was good, and his wife would get in these social circles of charities with other American women. My wife was there, and they would always say, "He's such a nice man, and she's such a nice woman. Can't you help him out?"

Finally I said to Carl, "All right, let's go over and see what your YMCA is." I went over there, and they had a shabby little building in the lower part of town. Their board was middle or lower middle class people who didn't have funds for anything to speak of, and they were just scrounging along a little bit with good hearts but nothing to work with or live in or enjoy--no facilities. They asked me if I would spearhead the possibility of building new quarters, and how they could proceed.

It just so happened that a member of the board of Kennecott, Mr. Cleveland Dodge, was a member of the board of the YMCA central headquarters. I forget where it was. They mentioned his name to me a couple of times, and I said, "What are you guys talking about?"

They said, "The possibility of buying a piece of land in the center part of Santiago," but they had no idea what it would cost, and they didn't know how to tackle the problem.

For some reason I fell into the trap. I took my engineering department and had them go out and cost it: How much would it cost? What do you want? Then I was up in New York for some meeting with the board of Braden, and I talked to this Mr. Dodge. I said to him, "These guys have talked to me down there. How do you do this thing?"

He said, "Well, if it's really a serious venture, we'll go on matching money up to a certain point."

"How far?"

"We'll just have to see how far you want to go."

I got my boys together and figured out what we could do. I thought we could start on an eight-story building, which was about the height of buildings you could build in that area where this empty lot was probably available. I found out how much material it would take, like concrete, steel, wood, and the like. Who do I know in the cement business--the president of the cement company, the steel company, and so on? And who are the members of the YMCA? It worked out that the president of the Banco de Chile was a member. I started to dig around, and I found out that Braden could put up all of the engineering and the project management free. Then we started separating things and asking how many other things we could get free.

I came to the conclusion that the building would cost something like $600,000--today it would probably be a $2.5 million building--of which I could probably finance 60 percent through hook and crook and donation of materials. But it was on the basis that the local members of the YMCA had to put up $50,000 as their part.

I called the head over there, and I said, "This is big poker, and this idea is a dream. I've got this thing engineered, and I think we can get 60 percent. If we get something going, I think we can attract the rest of the money. We'd have to take a chance, but I don't think you guys can put it up."

He was very indignant. This was, say, the fifth of the month. He said, "Can I meet you on the thirtieth at twelve o'clock?"

"Yes."

"Okay, goodbye," and he walked out, furious. He came back with four fellows on the thirtieth of the month, and he had money in cash, promissory notes, bank drafts, three-year payments--$50,000 in equivalents. Can you imagine?

I said, "If you people have that much faith and can do that much, let's go," and we went, and we built it. Today it's standing down there, and it's the best YMCA--.

All the Y's in the world have to live off the community for some reason, because they just don't want to charge what the Y should cost. You're always out every year, like the charities--the Community Chest and so on--begging money, and people get tired of giving to the YMCA. Of course, the businessmen use it for rock-bottom prices, and somebody else has to pay for it.

So I set these guys up, and I had my engineering department engineer out a maintenance program where you paint every three years, you do the pipes every five years, the boiler every fifteen years--everything like that; how much it is going to cost to operate per year for the next fifteen years? How many members do you have? Fine. Divide it, and that's what it's going to cost per year.

"Ohhh, we can't pay that."

"All right, let's stop now. You have to get more members or pay it."

I fought with them. Oh, they were furious. "Here we put up $50,000, and you want to charge these exorbitant fees?"

I said, "All right, fine; don't. I don't care about the project."

They knuckled under, and today it's the only Y that I know of in the world, or at least in this hemisphere, that finances itself and is in perfect condition.

Swent: And is it really used?

Haldeman: Yes, absolutely. It's packed full. I was just down there. Remember that the president of the Y was at the ceremony? He invited me down, and I hadn't been there for years. They had all the board members there and had a lunch for me. They said a prayer, then showed me the building. I asked, "Do you have self-financing?"

"Yes, sir, following your rules."

Swent: That's a wonderful accomplishment.

Haldeman: It's very nice.

Swent: Are you glad you did it?

Haldeman: Yes. I have YMCA medals and trophies all over the place. Not only that, I got locker number one. I suppose I still have it; it's an honorary locker.

Swent: Did you ever use it?

Haldeman: No.

Swent: Is there anything else that you would like to talk about? You mentioned the Union Club just in passing.

Haldeman: I'm pretty well cranked out right now.

Swent: Then it's time to stop, and I thank you very much for allowing me to interview you.

Transcribed by Judy Smith
Final Typed by Shannon Page

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Appendix--"A Chemical Assist for Copper," from Chemsphere Americas, Spring/Summer 1983.

Photographs by Jaime Villaseca

Esteban M. Domic had a lot riding on a trip to Arizona from his native Chile in March, 1978: His job, for one thing.

Attempting to perfect a mining process for which his company had contracted with an American engineering firm, he had traveled to Arizona to purchase a rock crusher for a new pilot plant at the Lo Aguirre mine near Santiago. The new plant would prove, he was certain, the soundness of his ideas for improving a new technology for the leaching of copper from oxide ore.

The pilot plant for the original technology had been producing more problems than solutions, and the alternative was to reinvest in conventional technology, which appeared economically ill-advised for that particular mine. Still, this was a case of one young Chilean metallurgist challenging the opinion of an American engineering firm — whose technology had already been purchased.

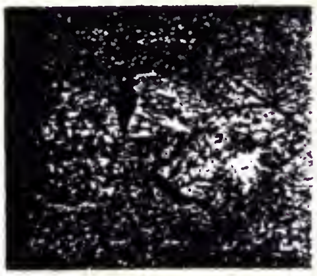
After much discussion, his boss, Robert M. Haldeman S., had allowed himself to be persuaded by his metallurgical superintendent that the new pilot plant should be built. "I had a one-way ticket back to the States, just in case," says Haldeman, a North American who since 1978 has served as general manager of the mining interests of Sociedad Minera Pudahuel (SMP), a firm of Chilean investors.

So it was that Domic found himself returning, with his crusher, to Santiago from Arizona, via Miami. As he changed planes at the Miami International Airport, a special traveler's variant of Murphy's Law went into effect. This law says that the greater amount of importance you attach to your baggage, the greater is the probability that it will disappear during the change of planes. Which is precisely what the 150-pound crusher did.

Eventually, however, it caught up with Domic, and he proceeded to prove the effectiveness of his version of the so-called "thin layer (TL) leaching" technology. The Lo Aguirre plant went onstream late in 1980.

Haldeman soon found his decision was justified in more ways than one:

- After the mine had been operating a short while, SMP and the American engineering firm* negotiated a new contract cancelling the royalties SMP would have paid under the original contract and making the two companies partners for marketing the revised technology.



Behind the improved technology for the TL leaching of copper from oxide and secondary sulfide ore are (left photo) *Robert Haldeman, general manager of SMP mining interests;* (on the left in right photo) *Esteban Domic, who devised the improvements, with Alberto Hormazabal, technical sales representative for Exxon Chemical's* ESCAID *solvent used in the process;* (on the left in bottom photo) *Carlos Lasserre, general manager of the SMP mine near Santiago, Chile, conferring with Federico Fanta, plant superintendent.*

- Lo Aguirre's first two years of commercial operation showed operating costs one-half to two-thirds lower than operating costs for traditional mining technologies, and considerably less than they would have been without the specialty solvent carrier from Exxon Chemical: ESCAID® 100. (See sidebar, page 26.)

These low operating costs made it possible to keep the mine open during a period of low copper prices, when other small mines, using traditional extraction methods, were forced to shut down.

- Since the technology can be scaled up and used with larger mines, it presents excellent marketing opportunities for the partners.
- The technology has also proved that mining can be a good neighbor to metropolitan areas. Located only 30 kilometers away from a city and in the midst of an agricultural area, Lo Aguirre has no smelting to concern its immediate neighbors. Soil tests consistently have shown no adverse effect on the area's farmlands.

There were two other immediate results: Domic kept his job and was made vice president of metallurgy and research and development for SMP. And Haldeman is celebrating his 37th year in Chile.

A Complex Mine

Located on a modern highway connecting Santiago with the port of Valparaiso, the Lo Aguirre mine was discovered by the Indians, exploited by the Jesuits, then forgotten until the 1920's when a mining engineer from the United States rediscovered it, along with a number of other forgotten mines. Still undeveloped, it was purchased in 1969 by SMP, new to mining.

The company soon learned that it had in

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* *Today, the contract is with Bechtel, which recently purchased the hydrometallurgical division of the North American engineering firm SMP was associated with originally.*

Lo Aguirre a "complex mine" — with both oxide and sulfide ores, each calling for a different extraction process. It was also a small mine, one, as it turned out, that produced only 16,500 tons of pure copper a year, which is about what a large mine might produce in a little more than 11 days. With the technology then common, the mine was scarcely worth the investment in one processing plant, let alone two.

The new solvent extraction technology seemed to be the answer. Costing about half the investment for a traditional copper plant, it would be used to develop the oxide ores. The fact that SMP is now developing the secondary sulfides in the same plant is the result of the improvements made to the original technology, in the leaching phase (as described in the sidebar).

Technology is, of course, only as good as the people behind it. And Lo Aguirre is a successful mine because of many people, in all phases of the operation. There were first of all the investors; as Haldeman says, "SMP management decided we were willing to be first." Haldeman himself exerts a strong positive influence on the mine, according to Carlos Lasserre D., Lo Aguirre's general manager. He and Federico A. Fanta, plant superintendent, were both attracted to SMP by the promise of working with new technology.

Domic had an even keener interest in solvent extraction technology. Prior to joining SMP, he had worked under a scientist who had brought to Chile from the United States new reagents for the extraction of copper and uranium. During his own subsequent research, Domic availed himself of assistance from Alberto Hormazabal C., technical sales representative for Exxon Chemical Americas' Chilean affiliate, who is one of the few experts among the Exxon affiliates on this type of solvent extraction technology.

The association begun in those early days continued throughout the development of the process at SMP. "Exxon Chemical helped us in many areas," says Domic. "When we had a problem, we shared it with Alberto, who was often able to get an answer from another Exxon location." Hormazabal was drawing on a body of experience in Exxon Chemical Technology, which has created a number of ESCAID diluents for metal recovery by solvent extraction, each one tailored to a specific metal and environment.

Others responsible for the success of Lo Aguirre are those who mine the ore and operate the plant.

"The processes involved with solvent extraction are very specialized in terms of labor," says Fanta. "People have to understand the process — to know why they are opening and closing valves. They frequently have to make decisions — to maintain safety, for example, or to judge the quantity of reagent to add, which depends on the kind of ore being processed."

Of Future Importance

There are a number of aspects to this tale of new technology that suggest the story is far from complete. The first is to note that the new TL leaching process tied to solvent extraction has the potential for helping Chile to make better use of one of its most important resources. Claiming the largest share of the world's known copper reserves — an estimated 97 million tons, or 24 percent — Chile is typically the second largest producer of copper, and takes first place when U.S. mines cut back production, as they have done recently. Even with Chile diversifying its export trade, copper remains a major contributor to the nation's balance of payments.

Chile's balance of payments would be favorably affected, too, by sales of the new technology abroad. SMP is currently testing a 600-ton ore sample from Jordan — 60 truckloads from the ship — to see if it is compatible with TL leaching. Conducted at the same SMP pilot plant that started it all, the trial is to extend for five months, using run-of-mine ore.

The opportunity to lower the cost of copper extraction may prove invaluable to all producers. While there is no shortage of copper, good ores are becoming depleted. This leaves lower grade ores and resulting increased production costs facing an industry whose product is too easily replaced by other materials. So any process which reduces operating costs dramatically even for low-grade ores — and which can be scaled up for use in mines much larger than Lo Aguirre — would be of considerable importance.

For small companies, the process can make it profitable to mine deposits producing less than 10,000 tons per year, once considered the break-even point. The operation of more small mines should in turn help the employment situation in a number of locations. SMP itself, at 16,500 tons per year, provides jobs for 350 people.

There is an interesting aside concerning an even smaller business — that of Chile's *pirquinero*, who works with pickax and mule

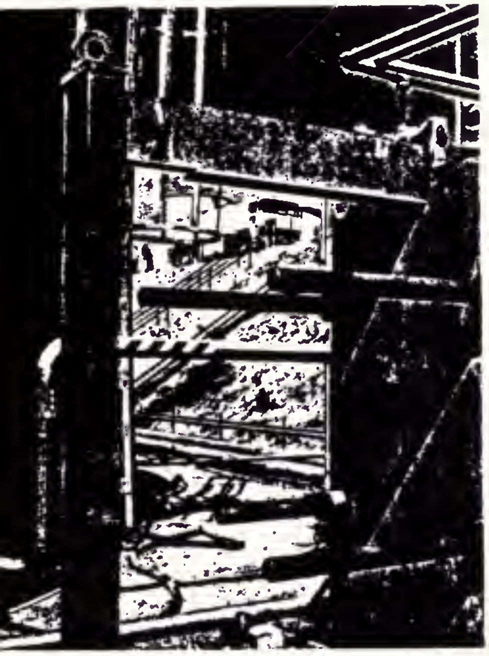
The bright blue electrolyte is pure copper sulfate, the end result of the solvent extraction phase.

or truck when high copper demand provides the incentive. He, of course, can mine only the oxides near the surface and must sell to a refiner. So the widespread use of solvent extraction at mines throughout the country may help him.

The *pirquinero* has not been operating for a while, however. Demand has been on a downward trend, and while recoveries in copper's two major markets, housing and auto, will in time reverse that, there are other pressures to help keep the mine operator cost conscious. Substitutes for many copper applications are readily available, for example — plastic for pipes, aluminum for radiators and electrical applications, and silica in communications products. With such competitive pressures, it is all the more to a producer's advantage to be able to find cost efficiencies such as those offered by the TL leaching/solvent extraction technologies.

The end result will be to help copper, one of the first metals to be used by mankind, to continue to contribute to the economies of the copper producing nations, and to the quality of life of the copper consumer.

Margaret A. Pratt



Escaid® 100 hydrocarbon solvent is delivered to SMP's Lo Aguirre mine. The Exxon Chemical solvent is the carrier for the reagent used in extracting the copper.

A Simple Process — And 50 Percent Lower Costs

Appropriate for the extraction of copper from either oxide or secondary sulfide ore — and for a number of other minerals as well — the improved thin layer (TL) leaching/solvent extraction technology which Sociedad Minera Pudahuel (SMP) and Bechtel are marketing is simplicity itself compared with the traditional methods for extracting copper. These involve a number of energy- and water-intensive processing steps, including smelting. A comparison of per-pound operating costs, in U.S. dollars, mining through final product, shows SMP costs to be less than one half of those associated with traditional methods:

SMP	**Traditional**
$.35	$.80-1.00

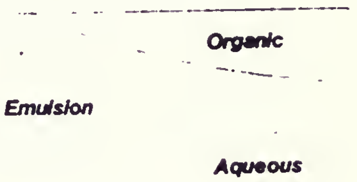
With low grade ore, the SMP cost might run $.53.

The extraction process as practiced at SMP consists of three steps: TL leaching, solvent extraction and electrowinning. For TL leaching, crushed ore is put into the trays of a loading/unloading bridge that moves across the curing and leaching pads to deposit the ore, which is cured and then treated with dilute sulfuric acid for 18 days.

The resulting green leaching liquor, the aqueous phase, moves to the two-part solvent extraction section where it is first mixed with an organic phase: a reagent, LIX 64N,* an oxime specific for copper solvent extraction, dissolved in Escaid® 100 hydrocarbon solvent from Exxon Chemical. When mixed, the reagent reacts with the copper, transferring it from the sulfuric acid solution into the organic phase. The sulfuric solution is recycled, and the organic phase passes to the second step for stripping. Here the organic phase is again mixed with sulfuric acid, this time of greater concentration. It transfers copper back to the aqueous phase to turn it into a bright blue electrolyte of pure copper sulfate.

As the organic solution is recycled, the electrolyte passes into the electrowinning building. Here, a lead anode and a thin sheet of copper (the cathode) are placed in the electrolyte. With electric current, the copper transfers to the cathode, producing high-purity, premium-priced cathodes. And the sulfuric acid is recycled.

The use of Escaid 100 solvent is critical to the success of this continuous process. A cutaway view of the gravity separation that occurs looks like this:



Without specific properties, a solvent carrying the reagent would entrain some of the aqueous phase in the organic and vice versa. As a result, some of the organic materials would be sent with the recycled sulfuric acid solution back to the pile of ore being leached. If money were saved in using a generic carrier solvent, the savings would be more than offset by the loss of reagent in the ore pile. Reagent costs U.S. $1,800 per drum!

Another reason for the use of Escaid 100 is the fact that it evaporates slowly. It also influences the rate of settling and even the rate of copper transfer.

With the use of Escaid 100 in the solvent extraction part of the process, operating costs run U.S. $27,000 a month at SMP's Lo Aguirre mine near Santiago, Chile. With a generic solvent, they would climb to U.S. $46,400, according to SMP.

The solvent's high flash point is another reason for its use. This safety factor will be even more important in countries nearer the equator. In Brazil, for example, the temperature can climb ten centigrade degrees above the flashpoint of the generic solvent; with Escaid 100 solvent's flashpoint of 78°C, there is no danger.

Lo Aguirre managers probably like the service factor almost as much as the product's characteristics. "The quality of Escaid 100 is consistent," says Metallurgy/R & D Vice President Esteban Domic. "And Exxon Chemical is the only supplier that supplies the product in bulk." Exxon Chemical's Chilean affiliate has built a special pipeline and receiving facility, including a laboratory, at the port of San Antonio to ensure that the product meets specifications.

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[*] LIX is a registered trademark of Henken Corporation. The reagent was developed in 1963.

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